SLV-ED8ME/ED8ML/EZ8AS/ EZ8NZ/EZ9AS

RMT-V243/V245

SERVICE MANUAL

Australian Model
SLV-EZ8AS/EZ9AS

E Model
SLV-ED8ML

ME Model
SLV-ED8ME

NewZealand Model
SLV-EZ8NZ

S MECHANISM

Hi-Fi

Photo: SLV-ED8ML

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS VI for MECHANICAL ADJUSTMENTS. (9-921-647-11)**

* The abbreviations of ED8, EZ8 and EZ9 contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	ED8	EZ8	EZ9
All model names SLV-	ED8ME ED8ML	EZ8AS EZ8NZ	EZ9AS

SPECIFICATIONS

System

Color system
- ED8:
  - PAL, MESECAM, NTSC 3.58, NTSC 4.43
- EZ8/EZ9:
  - PAL, NTSC 4.43

TV system
- ED8:
  - B/G, D/K, I
- EZ8/EZ9
  - B/G

Channel coverage
- ED8:
  - B/G: VHF E2 to E12/UHF E21 to E69/ CATV S01 to S05, S1 to S41
  - D/K: VHF R1 to R12, UHF R21 to R69
  - I: VHF SA4 to SA13/UHF B21 to B69/ CATV S01 to S05, S1 to S41
  - M: VHF A2 to A13/UHF A14 to A69/ CATV A-8 to A1, A to W, W+1 to W+84
- EZ8AS/EZ9AS:
  - VHF AS0 to AS12, AS5A, AS9A
  - UHF AS28 to AS69
  - CATV S01 to S05, S1 to S41
- EZ8NZ:
  - VHF NZ1 to NZ11
  - UHF E21 to E69
  - CATV S01 to S05, S1 to S41

Stereo system
- ED8/EZ8NZ:
  - NICAM STEREO: B/G, I
  - ZWEITON German stereo: B/G
- ED8AS/EZ9AS:
  - ZWEITON German stereo: B/G

RF output signal
- ED8/EZ8NZ:
  - UHF channels 21 to 69
- EZ8AS/EZ9AS:
  - UHF channels 28 to 69

Aerial out
- 75-ohm asymmetrical aerial socket

Inputs and outputs

LINE-1, 2-IN
- VIDEO IN, phono jack (1)
  - Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2)
  - Input level: 327 mVrms
  - Input impedance: more than 47 kilohms

LINE-3 IN (SAT IN) (ED8, EZ9)
- VIDEO IN, phono jack (1)
  - Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2)
  - Input level: 327mVrms
  - Input impedance: more than 47 kilohms

– Continued on next page –

VHS PAL NTSC4.43 VIDEO CASSETTE RECORDER

MICROFILM

SONY®

LINE –1 OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (2)
Standard output: 327 mVrms
Load impedance; 47 kilohms
Output impedance: less than 10 kilohms
LINE –2 OUT (AUDIO)
AUDIO OUT, phono jack (2)
Standard output: 327 mVrms
Load impedance; 47 kilohms
Output impedance: less than 10 kilohms
SKY TV DECODER (EZ8NZ)
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

General

Power requirements
110 – 240 V AC, 50/60 Hz (ED8)
220-240 V AC, 50 Hz (EZ8/EZ9)
Power consumption
22W (ED8)
23W (EZ8/EZ9)
Operating temperature
5 ˚C to 40 ˚C
Storage temperature
–20 ˚C to 60 ˚C
Dimensions
Approx. 430 × 100 × 286 mm (w/h/d): including projecting parts and controls
Mass
Approx. 5.7 kg: (ED8)
Approx. 5.9 kg: (EZ8/EZ9)

Supplied accessories

Remote commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
Plug adaptor (1) (ED8)
Audio/Video cable (3-phono to 3-phono) (1)

Design and specifications are subject to change without notice.

• Feature Difference

FEATURE \ SLV-	ED8	EZ8 AS	EZ8 NZ	EZ9 AS
ME-SECAM (REC/PB)	○/○	×/×	×/×	×/×
ADDITIONAL REAR INPUT (SAT IN)	○	×	×	○
SKY TV DECODER IN/OUT	×/×	×/×	○/○	×/×
MODULATOR SYSTEM	G,K,I,M	G	G	G
CLICK/JOG SHUTTLE (REMOTE COMMANDER)	×/×	×/×	×/×	○/○
REMOTE COMMANDER RMT-	V245	V245	V245	V243

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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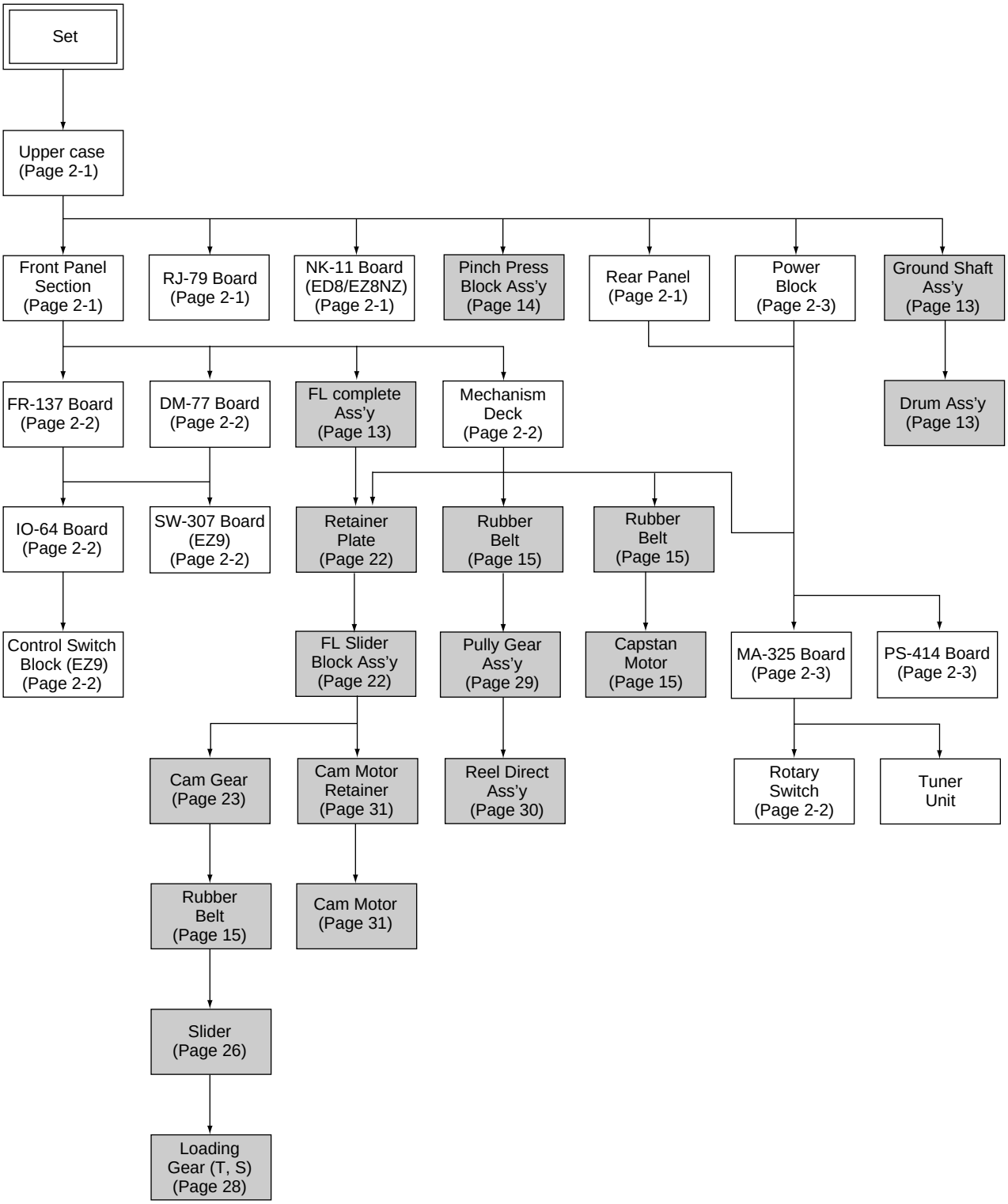
SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.

Note: Pages in ▭ indicated pages in the SERVICE MANUAL.
Pages in ▭ indicated pages in the VHS MECHANICAL ADJUSTMENT MANUAL VI.


Set
Upper case (Page 2-1)
Front Panel Section (Page 2-1)
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Tuner Unit
Rubber Belt (Page 15)
Cam Motor (Page 31)
Slider (Page 26)
Loading Gear (T, S) (Page 28)

SECTION 1 GENERAL

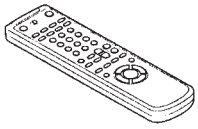
This section is extracted from SLV-ED8ME/ML instruction manual.

Step 1

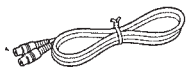
Unpacking

Check that you have received the following items with the VCR:

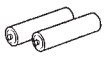
- Remote commander



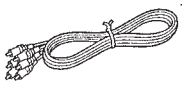
- Aerial cable



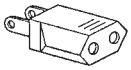
- R6 (size AA) batteries



- Audio/video cable (3-phono to 3-phono)



- Plug adaptor



Checking your model name

The instructions in this manual are for the 2 models : SLV-ED8ML and SLV-ED8ME. Check your model number by looking at the rear panel of your VCR. The SLV-ED8ML is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "SLV-ED8ME only."

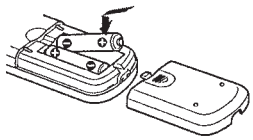
Step 2

Setting up the remote commander

Inserting the batteries

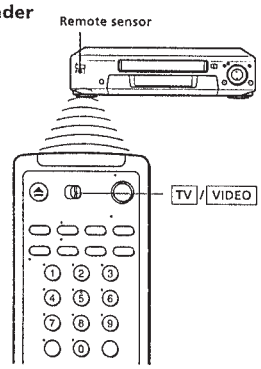
Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

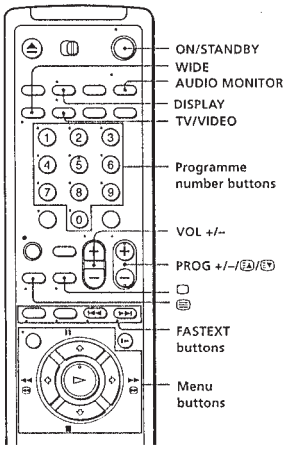
You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ⊠ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV/VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

continued

Step 2: Setting up the remote commander (continued)



TV control buttons

To	Press
Turn the TV into standby or active mode	ON/STANDBY
Select an input source of the TV either from aerial in or from line in	TV/VIDEO
Select the programme position of the TV	Programme number buttons or PROG +/–
Adjust the volume of the TV	VOL +/–
Switch to TV (Teletext off)	▢ (TV)
Switch to Teletext	▢ (Teletext)
Select the sound	AUDIO MONITOR
Use FASTEXT	FASTEXT buttons
Call up on-screen display	DISPLAY
Change the Teletext page	▲/▼
Operate TV menu options	Menu buttons
Switch the wide mode of a Sony wide TV (For other manufacture's wide TV, see "Controlling other TVs with the remote commander" on page 7)	WIDE

Notes

- The TV/VIDEO button selects an input source of the TV from aerial in or line in. The button does not control this VCR.
- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VIDEO at the top of the remote commander to TV.

2 Hold down ON/STANDBY, and enter your TV's code number(s) using the number buttons. Then release ON/STANDBY.

Now you can use the ON/STANDBY, VOL +/–, PROG +/–, programme number buttons, –/-- (ten's digit) and TV/VIDEO buttons to control your TV. You can also use the buttons marked with a dot (•) to control a Sony TV. To control the VCR, reset TV/VIDEO to VIDEO.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	01*1,02
Akai	68
Blaupunkt	10
Ferguson	52
Grundig	11*1
Hitachi	24
ITT/Nokia	15,16,69*1
Mitsubishi	27*1,28*1,50*1,51*1
NEC	66
Panasonic	17*1,49

Manufacturer	Code number
Philips	06*1,07*1,08*1
Saba	12,13
Samsung	22,23
Sanyo	25
Sharp	29
TEAC	67
Telefunken	36
Thomson	43*2
Toshiba	38

continued

Step 2: Setting up the remote commander (continued)

You can use the WIDE button after entering a code number with any of the following marks;

*1: Press WIDE to switch the wide picture mode on or off.

*2: Press WIDE, then press VOL +/– to select the wide picture mode you want.

*3: Press WIDE. The menu appears on the TV screen. Then, press ↑/↓/←/→ to select the wide picture you want and press OK.

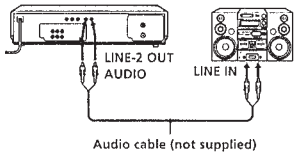
Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number may automatically reset to 01 (Sony). If your TV is not a Sony, it is recommended to manually set the appropriate code number every time you replace the batteries.
- If you set your TV's code number correctly while the TV is turned on, the TV turns off automatically.

Step 3: Connecting the VCR (continued)

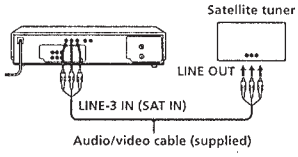
To a stereo system

You can improve sound quality by connecting a stereo system as shown on the right.



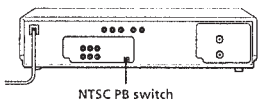
To a satellite tuner

You can record programmes from other equipment such as a satellite tuner.



Setting the NTSC PB switch to match your TV system

You have to set the NTSC PB switch on the rear of the VCR according to your TV system to display the on-screen menus when there is no video signal input, and play back a tape recorded in the NTSC 3.58 system properly.



Set the NTSC PB switch following the table below.

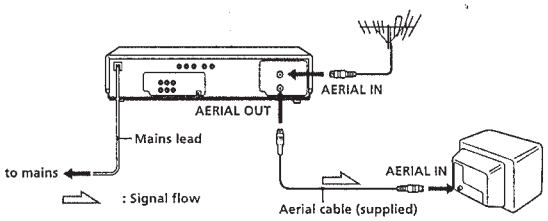
If your TV is compatible with	Set the NTSC PB switch to
PAL	ON PAL TV
NTSC 4.43	NTSC 4.43
NTSC 3.58	NTSC 3.58

Note

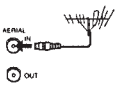
- If a video signal is input to the VCR (via the line input, tuner, or playback), the on-screen menus will appear on your TV regardless of the NTSC PB switch setting.

Step 3

Connecting the VCR



1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.



2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.

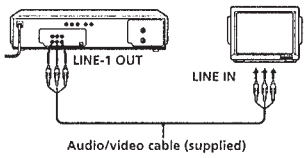
3 Connect the mains lead to the mains.

Additional connections

To a TV that has audio/video input jacks

This additional connection improves picture and sound quality. Connect the TV as shown on the right.

If you want to use the Trinitron TV Synchro Play function (see page 40), this connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO IN 1 jacks.)

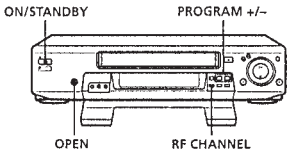


continued

Step 4

Tuning your TV to the VCR

If you have connected your VCR to the TV using the audio/video cable, skip this step.

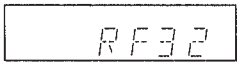


1 ON/STANDBY — Press ON/STANDBY to turn on the VCR.

2 RF CHANNEL — Press OPEN to open the drop down panel, then press RF CHANNEL on the VCR.

The factory-preset RF channel appears in the display window.

The VCR signal is output through this channel to the TV.



3 Turn on your TV and select a programme position for the VCR picture.

This channel will now be referred to as the video channel.

4 RF CHANNEL — Press RF CHANNEL.

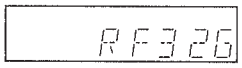
The TV system indicator appears in the display window.

continued

Step 4: Tuning your TV to the VCR (continued)

Press PROGRAM +/– to select the correct TV system.

If your TV's colour system and TV system are		Select
PAL	I	I
	D/K	K
	B/G	G
NTSC	M	M



5 Tune the TV to the same channel as that shown in the display window so that the picture on the right appears on the TV screen.

Refer to your TV manual for tuning instructions.

If the picture does not appear clearly, see "To obtain a clear picture from the VCR" below.

6 RF CHANNEL Press RF CHANNEL.

You have now tuned your TV to the VCR. From now on, whenever you want to play a tape, set the TV to the video channel.

To check to see if the TV tuning is correct

Set the TV to the video channel and press PROGRAM +/– on the VCR. If the TV screen changes to a different programme each time you press PROGRAM +/–, the TV tuning is correct.

To obtain a clear picture from the VCR

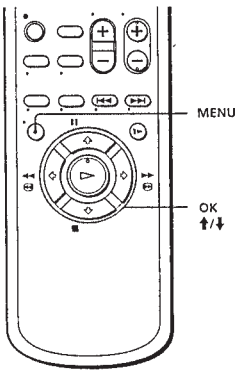
If the picture does not appear clearly in step 5 above, go to step 6 to finish this procedure once. Then start from step 2. After pressing RF CHANNEL in step 2 to display the RF channel, press PROGRAM +/– so that another RF channel appears. Then tune the TV to the new RF channel until a clear picture appears.

Note

- If you set the wrong TV system, you may have no sound or sound may be distorted (noisy sound).

Step 5

Selecting a language

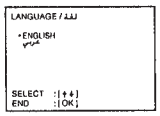


You can change the on-screen display language from English to Arabic.

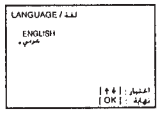
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

1 MENU Press MENU, then press ↑/↓ to move the cursor (▶) to LANGUAGE and press OK.



2 Press ↑/↓ to select the desired language, then press OK.



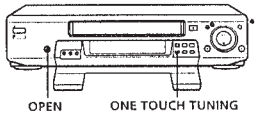
Step 6

Presetting channels

First, we recommend that you preset the receivable channels in your area using one touch tuning. If one touch tuning could not preset the channels correctly, you can preset them automatically using the menu. Then, if some channels could not be preset automatically, set them manually; if there are any unwanted channels among the preset ones, you can disable the channels.

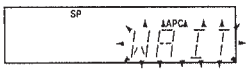
If you live in the area where various TV systems coexist, and have channels that don't match the TV system you selected in automatic presetting, reset the TV system for those channels (see "Presetting channels manually" on page 17). If the channels don't match the TV system, the sound may be distorted or noisy, or the colour TV programme may become black and white, etc.

Presetting all receivable channels using one touch tuning



1 ONE TOUCH TUNING Press OPEN to open the drop down panel, then press ONE TOUCH TUNING on the VCR for more than 3 seconds.

The VCR starts the channel presetting.



The WAIT indicator goes off when all receivable channels are preset.

To check to see if the channels are preset correctly

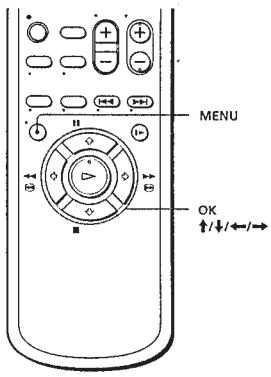
Set the TV to the video channel and press PROGRAM +/– on the VCR. If the TV screen changes to a different programme each time you press PROGRAM +/–, the channels are preset correctly.

If the sound is distorted or noisy, the VCR is set to a TV system different from your area's. Select the TV system and preset channels using the TUNER PRESET menu on the next page.

Tip

- To stop one touch tuning, press ONE TOUCH TUNING or ■ STOP on the VCR during the setting.

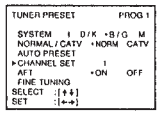
Presetting all receivable channels automatically



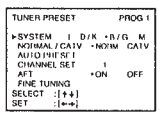
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

1 MENU Press MENU, then press ↑/↓ to move the cursor (▶) to TUNER PRESET and press OK.



2 Press ↑/↓/←/→ to move the cursor (▶) to SYSTEM, then select B/G, D/K, I or M, whichever is applicable in your area. If SYSTEM is set to the wrong position, the sound will be distorted or noisy.

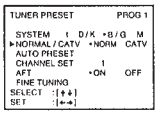


continued

Step 6: Presetting channels (continued)

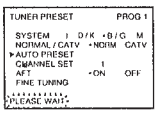
3 Press ↑/↓/←/→ to move the cursor (▶) to NORMAL/CATV, then select NORM.

To preset CATV channels, select CATV.



4 Press ↑/↓ to move the cursor (▶) to AUTO PRESET, then press OK.

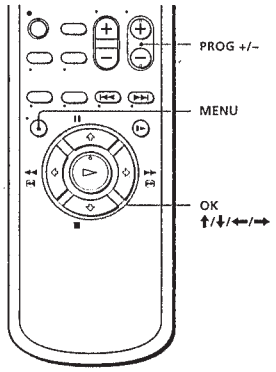
All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



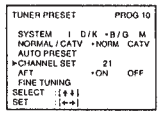
Notes

- The channel numbers besides CHANNEL SET may not be the same as those in your area. This is because this VCR's channel search system is based on the fixed TV system that has the widest channel coverage. If necessary, apply your local channel numbers to the programme positions (see "Presetting channels manually" on page 17).
- If the received channel is on cable TV, "C" appears on the left of the channel in step 4 in most areas. However, this won't be applied in some areas (see pages 20 to 27 for reference).

Presetting channels manually

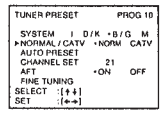


1 Press MENU, then press ↑/↓ to move the cursor (▶) to TUNER PRESET and press OK.

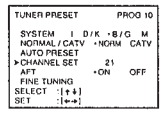


2 Press ↑/↓/←/→ to move the cursor (▶) to NORMAL/CATV, then select NORM.

To preset CATV channels, select CATV.



3 Press ↑/↓ to move the cursor (▶) to CHANNEL SET.

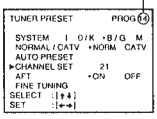


continued

Step 6: Presetting channels (continued)

4 Press PROG +/– to select the programme position.

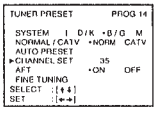
Selected programme position



5 Press → repeatedly until the channel you want is displayed.

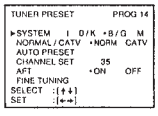
Pressing ← goes back to the previous channels.

The channels are scanned in the order shown on pages 20 to 27.



If you know the number of the channel you want, press the programme number buttons. For example, for channel 5, first press "0" and then press "5."

6 If the TV sound is distorted or noisy, press ↑/↓/←/→ to move the cursor (▶) to SYSTEM, then select B/G, D/K, I or M whichever is applicable in your area.



7 To allocate another channel to another programme position, repeat steps 4 and 5.

8 Press OK.

Disabling unwanted programme positions

After tuning the TV channels, you can disable unused programme positions. The disabled positions will be skipped later when you press the PROG +/– buttons. You can also disable unwanted programme positions using the SET UP CH AND G-CODE menu (page 33).

1 In step 5 on page 18, press programme number button "0" twice to display the number "0" beside CHANNEL SET.

2 Press OK.

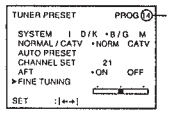
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture is not clear, you may also use the manual tuning function.

1 Press PROG +/– to select the programme number for which you cannot obtain a clear picture.

2 Press MENU, then select TUNER PRESET and press OK.

3 Select FINE TUNING. The fine tuning meter appears.



Selected programme position

4 Press ←/→ to get a clearer picture, then press OK.

Note that the AFT (Auto Fine Tuning) setting switches to OFF.

Notes

- The menu disappears automatically if you don't proceed for more than a few minutes.
- The channel numbers besides CHANNEL SET may not be the same as those in your area. This is because this VCR's channel search system is based on the fixed TV system that has the widest channel coverage. If necessary, apply your local channel numbers to the programme positions (see "Presetting channels manually" on page 17).

continued

Step 6: Presetting channels (continued)

Channel numbers in the CHANNEL SET field and the corresponding channels

TV system	B/G				
Country	Western Europe	Australia	New Zealand	Morocco	Indonesia
Channel number in the CHANNEL SET field	Corresponding channels				
1		AS0	1		1A
2	E2				
3	E3	1	2		2A
4	E4	2	3		3A
5	E5	6	4		4A
6	E6	7	5	M6	5A
7	E7	8	6	M7	6A
8	E8	9	7	M8	7A
9	E9	9A	8	M9	8A
10	E10	10	9	M10	9A
11	E11	11	10		10A
12	E12		11		11A
13					
14					
15		3			
16		4			
17					
18					
19					
20					
21	E21				
22	E22				
23	E23				
24	E24				
25	E25				
26	E26				
27	E27				
28	E28	28			
29	E29	29			
30	E30	30			

TV system	B/G				
Country	Western Europe	Australia	New Zealand	Morocco	Indonesia
Channel number in the CHANNEL SET field	Corresponding channels				
31	E31	31, 32			
32	E32	33			
33	E33	34			
34	E34	35			
35	E35	36			
36	E36	37			
37	E37	38			
38	E38	39, 40			
39	E39	41			
40	E40	42			
41	E41	43			
42	E42	44			
43	E43	45			
44	E44	46			
45	E45	47, 48			
46	E46	49			
47	E47	50			
48	E48	51			
49	E49	52			
50	E50	53			
51	E51	54			
52	E52	55, 56			
53	E53	57			
54	E54	58			
55	E55	59			
56	E56	60			
57	E57	61			
58	E58	62			
59	E59	63, 64			
60	E60	65			
61	E61	66			
62	E62	67			
63	E63	68			

continued

Step 6: Presetting channels (continued)

TV system	B/G				
Country	Western Europe	Australia	New Zealand	Morocco	Indonesia
Channel number in the CHANNEL SET field	Corresponding channels				
64	E64	69			
65	E65				
66	E66				
67	E67				
68	E68				
69	E69				
70					
C1	S1	5			
C2	S2				
C3	S3				
C4	S4				
C5	S5				
C6	S6	5A			
C7	S7				
C8	S8				
C9	S9			M4	
C10	S10			M5	
C11	S11				
C12	S12				
C13	S13				
C14	S14				
C15	S15				
C16	S16				
C17	S17				
C18	S18				
C19	S19				
C20	S20				
C21	S21				
C22	S22				
C23	S23				
C24	S24				
C25	S25				

TV system	B/G				
Country	Western Europe	Australia	New Zealand	Morocco	Indonesia
Channel number in the CHANNEL SET field	Corresponding channels				
C26	S26				
C27	S27				
C28	S28				
C29	S29				
C30	S30				
C31	S31				
C32	S32				
C33	S33				
C34	S34				
C35	S35				
C36	S36				
C37	S37				
C38	S38				
C39	S39				
C40	S40				
C41	S41				
C42	S01				
C43	S02				
C44	S03				
C45	S04				
C46	S05				

continued

Step 6: Presetting channels (continued)

TV system	D/K		I			M	
Country	East Europe	China	UK/Hong Kong	Ireland	South Africa	U.S.A.	Japan
Channel number in the CHANNEL SET field	Corresponding channels						
1				A			
2	R1	1					
3		2		B		2, C2	
4		3		C		3	
5	R6	7		D	4	7	J-5
6	R7	8		E	5	8	J-6
7						9	J-7
8							
9						12	J-10
10						13	J-11
11						J	J-12
12	R12			J	10	K	S1
13	R2						
14	R3	4				5	
15	R4	5					
16	R5						
17	R8	9		F	6	10	J-8
18	R9	10		G	7	11	J-9
19	R10	11		H	8		
20	R11	12		I	9		
21	R21	13	B21		21	14, W+29, W+30	J13
22	R22	14	B22		22	15, 16, W+31	J14, J15
23	R23	15	B23		23	17, W+32	J16
24	R24	16	B24		24	18, W+33, W+34	J17
25	R25	17	B25		25	19, 20, W+35	J18, J19
26	R26	18	B26		26	21, W+36	J20
27	R27	19	B27		27	22, W+37, W+38	J21
28	R28	20	B28		28	23, 24, W+39	J22, J23
29	R29	21	B29		29	25, W+40	J24
30	R30	22	B30		30	26, W+41, W+42	J25
31	R31	23	B31		31	27, 28, W+43	J26, J27

TV system	D/K		I			M	
Country	East Europe	China	UK/Hong Kong	Ireland	South Africa	U.S.A.	Japan
Channel number in the CHANNEL SET field	Corresponding channels						
32	R32	24	B32		32	29, W+44	J28
33	R33		B33		33	30, W+45, W+46	J29
34	R34		B34		34	31, 32, W+47	J30, J31
35	R35		B35		35	33, W+48	J32
36	R36		B36		36	34, W+49, W+50	J33
37	R37		B37		37	35, 36, W+51	J34, J35
38	R38	25	B38		38	37, W+52	J36
39	R39	26	B39		39	38, W+53, W+54	J37
40	R40	27	B40		40	39, 40, W+55	J38, J39
41	R41	28	B41		41	41, W+56	J40
42	R42	29	B42		42	42, W+57, W+58	J41
43	R43	30	B43		43	43, 44	J42, J43
44	R44	31	B44		44	45	J44
45	R45	32	B45		45	46	J45
46	R46	33	B46		46	47, 48	J46, J47
47	R47	34	B47		47	49	J48
48	R48	35	B48		48	50	J49
49	R49	36	B49		49	51, 52	J50, J51
50	R50	37	B50		50	53	J52
51	R51	38	B51		51	54	J53
52	R52	39	B52		52	55, 56	J54, J55
53	R53	40	B53		53	57	J56
54	R54	41	B54		54	58	J57
55	R55	42	B55		55	59, 60	J58, J59
56	R56	43	B56		56	61	J60
57	R57	44	B57		57	62	J61
58	R58	45	B58		58	63, 64	J62
59	R59	46	B59		59	65	
60	R60	47	B60		60	66	
61		48	B61		61	67, 68	
62		49	B62		62	69	

continued

Step 6: Presetting channels (continued)

TV system	D/K		I			M	
Country	East Europe	China	UK/Hong Kong	Ireland	South Africa	U.S.A.	Japan
Channel number in the CHANNEL SET field	Corresponding channels						
63		50	B63		63	70	
64		51	B64		64	71, 72	
65		52	B65		65	73	
66		53	B66		66	74	
67		54	B67		67	75, 76	
68		55	B68		68	77	
69		56	B69		69	78	
70		57				79	
C1						A-3	J-3
C2						A-2, A-1	M1, M2
C3						A	M3
C4						B	M4
C5						C	M5
C6						D	M6
C7						E	M7
C8						F, G	M8, M9
C9						H	M10
C10		6				I	J-4
C11					11	L	S2
C12					(12)	M, N	S3
C13					13	O	S4
C14						P	S5, S6
C15						Q	S7
C16						R	S8
C17						S	S9
C18						T, U	S10, S11
C19						V	S12
C20						W	S13
C21						W+1, W+2	S14, S15
C22						W+3	S16
C23						W+4	S17

TV system	D/K		I			M	
Country	East Europe	China	UK/Hong Kong	Ireland	South Africa	U.S.A.	Japan
Channel number in the CHANNEL SET field	Corresponding channels						
C24						W+5, W+6	S18, S19
C25						W+7	S20
C26						W+8	S21
C27						W+9, W+10	S22, S23
C28						W+11	S24
C29						W+12	S25
C30						W+13, W+14	S26, S27
C31						W+15	S28
C32						W+16	S29
C33						W+17, W+18	S30, S31
C34						W+19	S32
C35						W+20	S33
C36						W+21, W+22	S34, S35
C37						W+23	S36
C38						W+24	S37
C39						W+25, W+26	S38, S39
C40						W+27	S40
C41						W+28	S41
C42						4, 4A	
C43							
C44						6	
C45						A-5	J-1
C46						A-4	J-2

Tip

- The shadow in the table shows the adjustable RF output channel range (see page 11 for reference).

Note

- There may be a case that the same area channel may appear repeatedly as the other channel number in the CHANNEL SET field.

Step 7

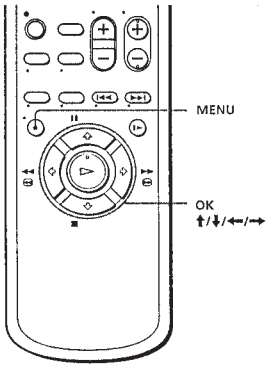
Setting up G-CODE

G-CODE is a feature in Sony VCRs that simplifies programming the VCR to make timer recordings. To use G-CODE, each programme position needs to be matched with its G-CODE guide channel. To get the guide channel numbers, look in the programme guide for your area that features G-CODE numbers.

If you want to record satellite broadcast using G-CODE, see page 30.

Before you start...

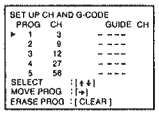
- Turn on the VCR and the TV.
- Set the TV to the video channel.



Setting the guide channels

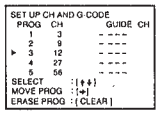
1 Press MENU, then press ↑/↓ to move the cursor (▶) to SET UP CH AND G-CODE and press OK.

The preset channels are displayed on the screen.

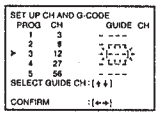


2 Press ↑/↓ to move the cursor (▶) to the row on which you want to set the guide channel.

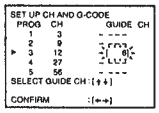
To display other pages for programme positions 6 to 50, press ↑/↓ repeatedly.



3 Press ➡ twice to flash the guide channel column.

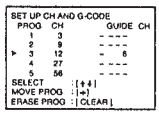


4 Press ↑/↓ to select the guide channel number assigned in the programme guide.



5 Press ⬅/➡ to confirm the setting.

The cursor (▶) appears in the leftmost column.



6 To set the guide channel of another station, repeat steps 2 to 5.

If you want to change the programme positions of the stations, proceed to step 2 of "Step 8: Changing/disabling programme positions" on page 31.

7 Press OK.

continued

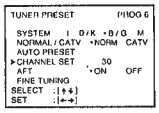
Setting up G-CODE for satellite broadcasts (if applicable)

When your satellite tuner is connected via the AERIAL IN connector, first you have to set the programme position for each satellite channel using the TUNER PRESET menu. Then set the guide channel number for each satellite channel using the SET UP CH AND G-CODE menu.

If your satellite tuner is connected via the LINE-1 IN jacks, you don't have to set programme positions nor guide channel numbers for satellite channels. Skip the following operations.

1. Turn on the satellite tuner.
2. Press MENU, then select TUNER PRESET and press OK.
3. Press PROG +/– to select a programme position you want to use for watching a satellite channel.
4. Select CHANNEL SET, then press ➡ to tune the VCR to the satellite tuner.

   The channel number displayed beside CHANNEL SET is used for receiving all satellite broadcasts from the satellite tuner.



5. Press PROG +/– to select another programme position for another satellite channel, and press the programme number buttons to enter the same channel number as the one displayed in step 4.

   Repeat this step for all satellite channels.
6. Set the guide channel number for each programme position assigned to the satellite channel, following the procedures in "Step 7: Setting up G-CODE" on page 28.

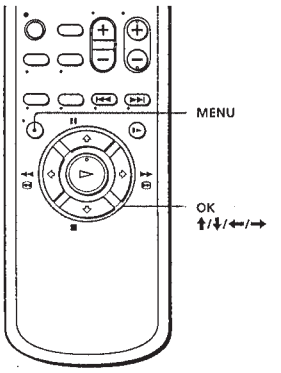
Notes

- The G-CODE used in this VCR is for Singapore, Malaysia, Hong Kong, Macau, etc. and cannot be used in areas such as U.S.A, Canada, Japan, Korea, Taiwan and U.K.
- The menu disappears automatically if you don't proceed for more than a few minutes.
- If you inadvertently entered a guide channel number, press ↑/↓ repeatedly to reset the "GUIDE CH" column to "---." "---" appears between 1 and 255.
- The VCR does not allow entering the guide channel number, if the same number has been set.
- If you use a satellite tuner connected via the LINE-1 IN jacks, you don't have to setup G-CODE. Just record a satellite programme using G-CODE, and the VCR automatically records the programme from the LINE-1 IN jacks.
- When you record a satellite broadcast using G-CODE, you need to select the desired channel on the satellite tuner manually.

Step 8

Changing/ disabling programme positions

After setting the channels and G-CODE guide channels, you can change the programme positions as you like. If any programme positions are unused or contain unwanted channels, you can disable them.



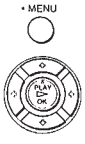
Before you start...

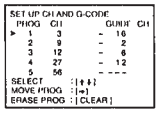
- Turn on the VCR and the TV.
- Set the TV to the video channel.

Changing programme positions

e.g. Moving the programme position from 3 to 1.

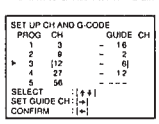
1 Press MENU, then press ↑/↓ to move the cursor (▶) to SET UP CH AND G-CODE and press OK.





2 Press ↑/↓ to move the cursor (▶) to the row on which you want to change the programme position, then press ➡.

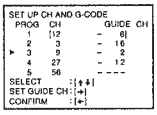
To display other pages for programme positions 6 to 50, press ↑/↓ repeatedly.



continued

3 Press ↑/↓ until the selected channel and guide channel row moves to the desired programme position.

The selected channel and guide channel are inserted at the new programme position and the intermediate channels are displaced to fill the gap.



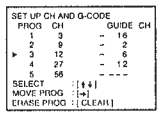
4 Press ← to confirm the setting.

5 To change the programme position of another station, repeat steps 2 to 4.

6 Press OK.

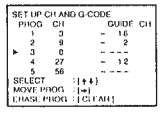
2 Press ↑/↓ to move the cursor (▸) to the row on which you want to disable.

To display other pages for programme positions 6 to 50, press ↑/↓ repeatedly.



3 CLEAR Press CLEAR.

The selected row will be cleared as shown on the right.



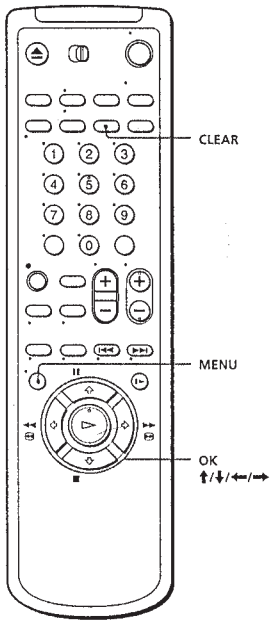
4 Repeat steps 2 and 3 for any other programme positions you want to disable.

5 Press OK.

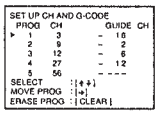
Disabling unwanted programme positions

Note

- Be sure to select the programme position you want to disable correctly. If you disable a programme position by mistake, you need to reset that channel manually.



1 MENU Press MENU, then press ↑/↓ to move the cursor (▸) to SET UP CH AND G-CODE and press OK.



continued

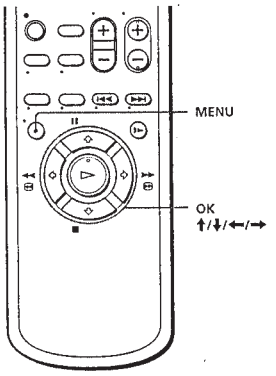
Step 9

Setting the clock

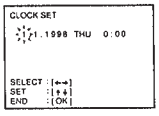
You must set the time and date on the VCR to be able to use the timer recording features properly.

Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

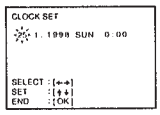


1 MENU Press MENU, then press ↑/↓ to move the cursor (▸) to CLOCK SET and press OK.

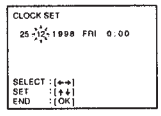


2 Press ↑/↓ to set the date.

The day of the week is set automatically.



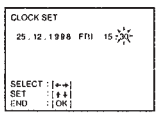
3 Press → to flash the month and set the month using ↑/↓.



continued

Step 9: Setting the clock (continued)

4 Set the year, hour and minutes in sequence, using → to flash the item to be set, and ↑/↓ to select the digits.

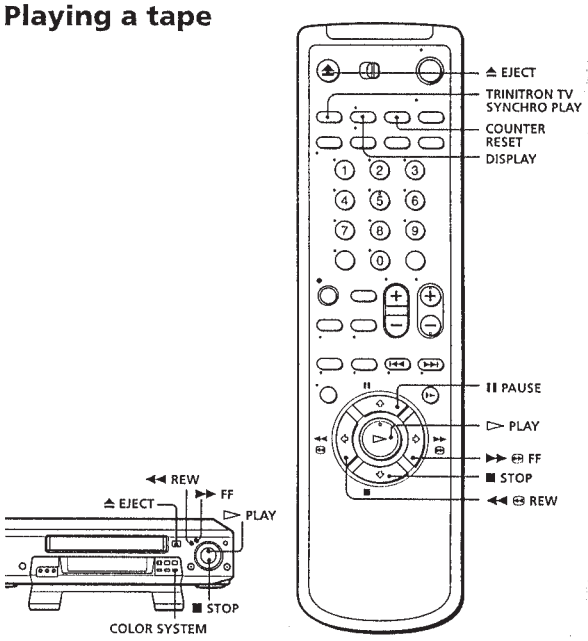


5 Press OK to start the clock.

Tip
- To change the digits during setting, press ← to return to the item to be changed, and select the digits using ↑/↓.

Note
- The menu disappears automatically if you don't proceed for more than a few minutes.

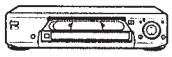
Playing a tape



1 Turn on your TV and set it to the video channel.

2 Insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.



continued

Playing a tape (continued)

3 Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	⏏ EJECT

To set the colour system

If streaks appear during playback, press COLOR SYSTEM on the VCR to conform to the system that the tape was recorded in. (Normally, the colour system is correctly set whenever the tape is inserted.)

If your tape was recorded in	Press COLOR SYSTEM until the indication below appears in the display window.
PAL	PAL
MESECAM	PAL
NTSC	NTSC

To play an NTSC-recorded tape

Set NTSC PB at the rear of the VCR according to the colour system of your TV.

If your TV is	Set NTSC PB to
PAL	ON PAL TV
NTSC 4.43	NTSC 4.43
NTSC 3.58	NTSC 3.58

To use the time counter

At the point on the tape that you want to find later, press COUNTER RESET. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press DISPLAY.

Notes
- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.
- While setting the menu on the TV screen, you cannot use the ▷ PLAY, ❚❚ PAUSE, ▶▶ FF, ◀◀ REW or ■ STOP buttons.
- If a tape has portions recorded in both PAL and NTSC systems, the time counter reading will not be correct. This is due to the difference between the counting cycles of the two colour systems.
- Depending on your TV, the following may occur while playing an NTSC-recorded tape:
  - the picture is black and white
  - the picture shakes
  - no picture appears on the TV screen
  - black streaks appear horizontally on the TV screen
  - the colour density increases or decreases.
- Tapes recorded in the LP mode of NTSC system on other VCRs can be played back on this VCR, but the picture quality cannot be guaranteed.

continued

Turning on the VCR and TV, and starting playback automatically (Trinitron TV Synchro Play)

You can only use this function if your TV is made by Sony (Trinitron TV).

How to connect to use this function

Connect the VCR and TV with the audio/video cable (see "To a TV that has audio/video input jacks" on page 9). Be sure to connect the audio/video cable to the VIDEO IN 1 jacks on the TV if the TV has two inputs or more. The TV must be placed where it will respond to the remote commander, while you are pointing it at the VCR.

Operation

Make sure that the TV's power is in standby mode.

Press TRINITRON TV SYNCHRO PLAY and hold the remote commander in place for about two seconds.

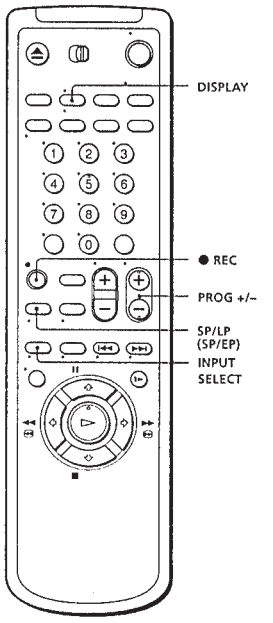
The VCR and TV turn on, and the TV is set to VCR reception. If there is a tape in the VCR, playback starts automatically.

Notes

- If the Trinitron TV Synchro Play function does not work properly:
  - Wait a few moments, and press the button again.
  - Replace both of the batteries with new ones, and press the button again.

  Note that this function may not operate some Sony TVs because of the remote commander's signal limitations.
- Do not press TRINITRON TV SYNCHRO PLAY while playing back a video tape. If you do so, the TV's input source will momentarily switch to the TV's tuner.

Recording TV programmes

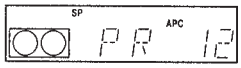


1 Turn on your TV and set it to the video channel.

2 Insert a tape with its safety tab in place.

3 • PROG

Press PROG +/– to select the programme position you want to record.

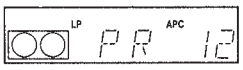


continued

4 SP/LP (SP/EP)

Press SP/LP (SP/EP) to select the tape speed, SP or LP.

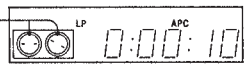
LP (Long Play) provides recording time twice as long as SP (Standard Play), however, SP produces better picture and audio quality.



5 ●REC

Press ● REC to start recording.

The recording indicator lights up red in the display window.

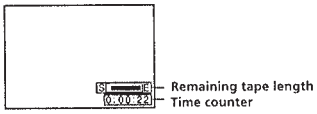


To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining.



To watch another TV programme while recording

1 If the TV is connected to the VCR using an audio/video cable, set the TV to TV input. If the TV is connected to the VCR using only the aerial cable, skip this step.

2 Select another programme position on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.

To record NTSC colour system programmes

The VCR can record NTSC signals from the VCR tuner, LINE-1 IN, LINE-2 IN and LINE-3 IN (SAT IN) jacks.

For tape speed, select SP or EP in step 4.

EP provides recording time three times as long as SP, however, SP produces better picture and audio quality.

When playing back, the VCR automatically detects the tape speed.

Tips

- To select a programme position, you can use the programme number buttons on the remote commander. For two-digit numbers, press the -/-- (ten's digit) button followed by the programme number buttons.
- You can select a video source from the LINE-1 IN, LINE-2 IN or LINE-3 IN jacks using INPUT SELECT or PROG +/– buttons. When you use PROG +/–, "L1", "L2" or "L3" in the display window appears between the lowest programme position and the highest one.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV.

Notes

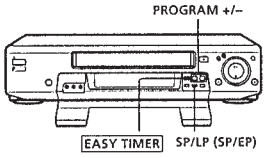
- The display does not appear during still (pause) mode or slow-motion playback.
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY.
- The remaining tape length does not appear while playing or recording in NTSC system.

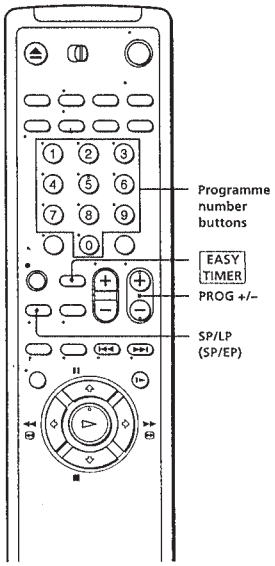
Recording TV programmes using the easy timer

You can record one programme on the same day (within 24 hours) with the easy timer. If the VCR clock has not been set due to power interruption, etc., you can set the clock and timer recording.

Before you start...

- Insert a tape with its safety tab in place. Make sure the tape is longer than the recording time.
- If you want to see the setting on the TV screen, turn on the TV and set it to video channel.

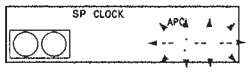




1 EASY TIMER

Press EASY TIMER.

The CLOCK indicator appears and the current time flashes in the display window. If the clock has not been set yet or has been cleared, "–:– –" flashes.

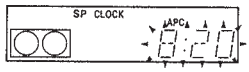


2 • PROG

Set the current time, if necessary, using PROG +/– or the programme number buttons. If the clock has already been set correctly, skip this step.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

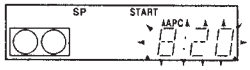
- Press PROG +/– to increase or decrease the time by a minute. Holding down PROG +/– changes the time by 15 minutes.
- Press the number buttons to enter hours and minutes. To set the clock to "8:20", for example, press 0, 8, 2 and 0 in sequence.



3 EASY TIMER

Press EASY TIMER to confirm the clock setting.

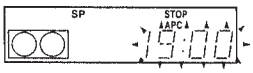
The START indicator appears.



4 • PROG, EASY TIMER

Set the recording start time using PROG +/– or the programme number buttons in the same way as in step 2, then press EASY TIMER.

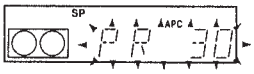
The STOP indicator appears.



5 • PROG, EASY TIMER

Set the recording stop time in the same way as in step 2, then press EASY TIMER.

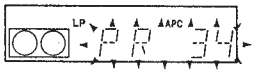
A programme number flashes.



6 • PROG, SP/LP (SP/EP)

Press PROG +/– or the programme number buttons to select the programme you want to record.

To select the tape speed, press SP/LP (SP/EP).



7 EASY TIMER

Press EASY TIMER to confirm the setting.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

continued

Recording TV programmes using the easy timer (continued)

To stop recording

To stop the VCR while recording, press ■ STOP.

To check or change the timer setting

Press EASY TIMER repeatedly until the setting you want to check or change flashes. Then re-enter the new setting, if necessary. You can also change the timer setting using the TIMER SET/CHECK menu. For details, see page 55.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press ON/STANDBY. The ⏲ indicator turns off and the VCR switches on. Remember to press ON/STANDBY to reset the VCR in timer recording standby after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV programme.

Tips

- If you make a mistake when entering the time with the programme number buttons, complete entering the four digits, then re-enter the time. Then press EASY TIMER to confirm the setting.
- To record from a source connected to LINE-1 IN, LINE-2 IN or LINE-3 IN jacks, press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the display window.
- To record NTSC signals, set the tape speed to SP or EP. To set to the EP mode, display "LP" in the display window.
- To cancel the easy timer setting, press CLEAR on the remote commander or press PROGRAM + and – on the VCR at the same time during the setting. Note that the cancellation can only be done after clock setting mode.

Notes

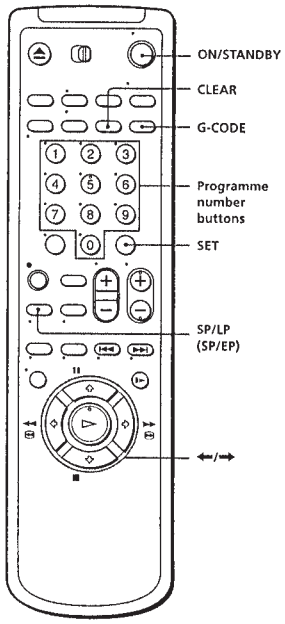
- You cannot set the easy timer if eight programmes have already been set.
- You can set the timer for only one programme using the easy timer. If you want to set the timer for other programmes, use G-CODE or the TIMER SET/CHECK menu. For details, see pages 47 and 50.
- You cannot set the date using the easy timer. Set the date using the CLOCK SET menu if you want to set the timer with the G-CODE or TIMER SET/CHECK menu. For details, see page 35.
- The ⏲ indicator flashes in the display window when you set the timer with no tape inserted.

Recording TV programmes using G-CODE

Just enter the programme's G-CODE number listed in the TV programme guide. The date, times and programme position of that programme are set automatically. You can preset up to eight programmes at a time.

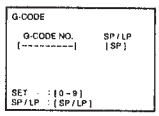
Before you start...

- Check that the VCR clock is set to the correct time.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.



1 G-CODE

Press G-CODE.

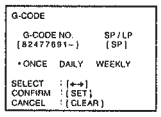


continued

2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

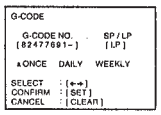
Press the programme number buttons to enter the programme's G-CODE number.

If you make a mistake, press CLEAR and re-enter the correct number.



3 SP/LP (SP/EP)

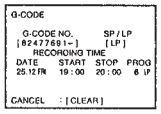
Press SP/LP (SP/EP) to select SP or LP.



4 PLAY OK

Select ONCE, DAILY or WEEKLY by using ←/→, then press SET:

To record	Select
Only once	ONCE
Everyday Monday to Friday	DAILY
Once a week	WEEKLY



SET

The date, start and stop times, programme position, and tape speed appear on the TV screen.

If the information is not correct, press CLEAR to cancel the setting.

5

To enter another setting, repeat steps 1 to 4.

6 • ON/STANDBY

Press ON/STANDBY to turn off the VCR.

The ⏻ indicator appears in the display window and the VCR stands by for recording.

To stop recording

To stop the VCR while recording, press ■ STOP.

To record satellite broadcasts

When you connect the satellite tuner and the VCR, you can record satellite programmes using G-CODE if applicable.

1 Turn on the satellite tuner.

2 On the satellite tuner, select the satellite programme for which you wish to make a timer setting.

3 Repeat the steps described on page 47 and page 48.

4 Keep the satellite tuner turned on until the VCR finishes recording the satellite programme for which you have made a timer setting.

Tips

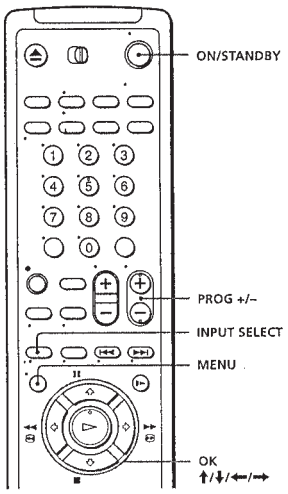
- To cancel the procedure, press G-CODE before pressing SET.
- To record NTSC signals, set the tape speed to SP or EP. To set to the EP mode, display "LP" in the tape speed position.

Setting the timer manually

You can preset up to eight programmes at a time.

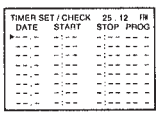
Before you start...

- Check that the VCR clock is set to the correct time.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.



1 • MENU

Press MENU and select TIMER SET/CHECK, then press OK.



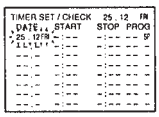
2 PLAY OK

Set the date, start and stop times, programme position, and tape speed:

1 Press → to flash each item in turn.

2 Press ↑/↓ to set each item.

To correct a setting, press ← to return to that setting and reset.



To record the same programme every day or the same day every week, press ↓ while the date is flashing. For details, see "Daily/weekly recording" on the next page.

To record from a source connected to the LINE-1 IN, LINE-2 IN or LINE-3 IN jacks; press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the "PROG" position.

3 PLAY OK

Press → to confirm the setting.

The cursor (▶) appears at the beginning of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4 PLAY OK

Press OK.

5 • ON/STANDBY

Press ON/STANDBY to turn off the VCR.

The ⏻ indicator appears in the display window and the VCR stands by for recording.

To record from other equipment, leave the connected equipment switched on.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 2 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

the current date → SUN-SAT → MON-SAT → MON-FRI → EVERY SAT .....
→ EVERY MON → EVERY SUN → 1 month later → (dates count down)
→ the current date

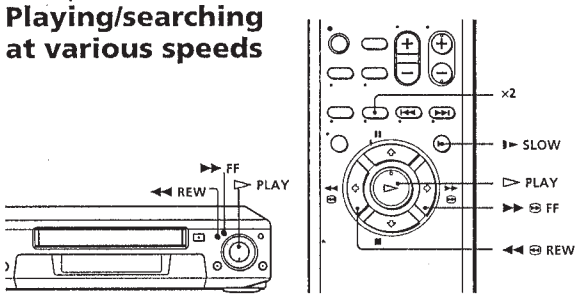
Tips

- To set the programme position, you can also use the PROG +/– or programme number buttons.
- To set the tape speed, you can also use SP/LP (SP/EP).
- To record NTSC signals, set the tape speed to SP or EP. To set the EP mode, display "LP" in the tape speed position.

Note

- The ⏻ indicator flashes in the display window when you press ON/STANDBY with no tape inserted.

Playing/searching at various speeds



Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold ▶▶ FF down. During rewind, hold ◀◀ REW down.
Play at high speed	• During playback, press ▶▶ FF or ◀◀ REW on the remote commander. • During playback, hold ▶▶ FF or ◀◀ REW down. When you release the button, normal playback resumes.
Play at twice the normal speed	During playback or pause, press ×2.
Play in slow motion	During playback or pause, press SLOW.
Play frame by frame	During pause, press ▶▶ FF or ◀◀ REW. Hold the button down to play one frame each second.
Rewind and start play	During stop, press PLAY on the VCR while holding ◀◀ REW down on the VCR.

To resume normal playback

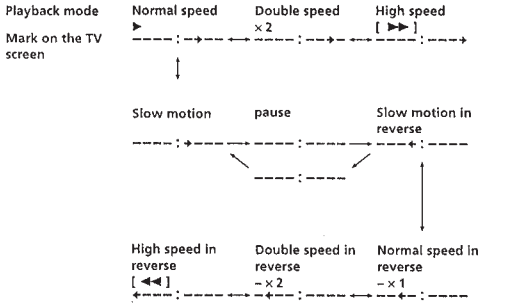
Press PLAY.

Using the CLICK JOG SHUTTLE ring

With the CLICK JOG SHUTTLE ring you can operate a variety of playback options.
There are two ways to use the CLICK JOG SHUTTLE ring: normal mode (CLICK SHUTTLE ring) and jog mode (CLICK JOG ring).

To use the CLICK SHUTTLE ring in normal mode

During playback or pause, turn the CLICK SHUTTLE ring clockwise or counterclockwise. Each change in the CLICK SHUTTLE ring position changes the playback mode, and the corresponding mark appears on the TV screen for a few seconds in the following way if the on-screen display function is on.



To use the CLICK JOG ring in jog mode

Use this mode for frame-by-frame playback.
Press JOG to enter the jog mode. The JOG button/indicator lights up. If you change to jog mode during any playback mode, playback pauses so you can see a still picture. Each change in the CLICK JOG ring position shifts the picture one frame. To shift frames in reverse, turn the CLICK JOG ring counterclockwise.
The frame shift speed depends on the speed you turn the CLICK JOG ring.
To resume normal playback, press PLAY.

Tip

- Adjust the picture using TRACKING +/– on the VCR if:
  – streaks appear while playing in slow motion
  – the picture shakes while pausing.

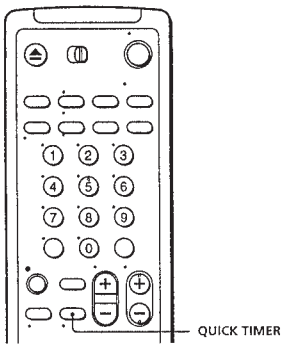
  To set tracking to the centre position, press both buttons at the same time.

Notes

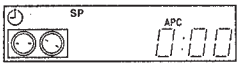
- The playback sound is muted during these operations.
- In LP or EP mode, noise may appear or there may be no colour.
- If the playback mode mark doesn't appear on the TV screen, press DISPLAY.
- On screen symbols, such as the bar indication, may shake while playing or searching at various speeds.
- The picture may have snow when playing at high speed in reverse.

Recording TV programmes using the quick timer

After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.



1 While recording, press QUICK TIMER once.
The ⏲ indicator appears in the display window.



2 Press QUICK TIMER repeatedly to set the duration.
Each press advances the time in increments of 30 minutes.

0:00 → 0:30 → 1:00 ·····→ 10:30 → 11:00

The duration decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press QUICK TIMER repeatedly to set to the new duration.

To stop recording

To stop the VCR while recording, press ■ STOP.

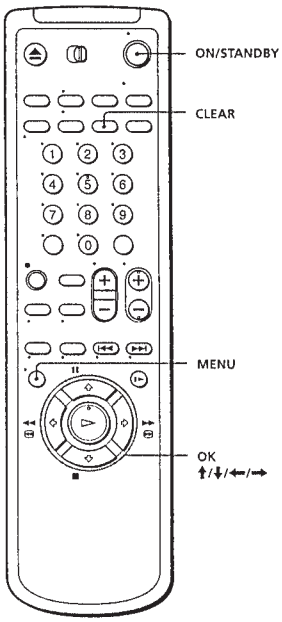
Using the quick timer during stop mode

You can set the quick timer and start recording during stop mode by pressing QUICK TIMER. To set the channel, you can use the PROG +/– or INPUT SELECT buttons. Press QUICK TIMER repeatedly to set the recording duration. The recording will start automatically.

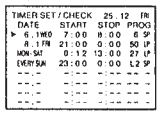
Checking/ changing/ cancelling timer settings

Before you start...

- Turn on your TV and set it to the video channel.



1 Press ON/STANDBY to turn on the VCR.
2 Press MENU, then select TIMER SET/CHECK:
- If you want to change a setting, go on to the next step.
- If you do not need to change the settings, press OK, then turn off the VCR to return to recording standby.


TIMER SET / CHECK 25 . 12 FRI
DATE START STOP PROG
▶ 6 : 1MO 7 : 00 8 : 00 8 SP
8 : 1FRI 21 : 00 0 : 00 50 LP
MON-SAT 9 : 12 13 : 00 27 LP
EVERY SUN 23 : 00 0 : 00 L2 SP

continued

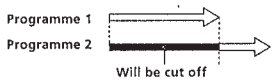
3 Press ↑/↓ to select the setting you want to change or cancel:
- To change the setting, press ←/→ to flash the item you want to change, and press ↑/↓ to reset it. Then, press → repeatedly until the cursor (▶) appears at the beginning of the line.
- To cancel the setting, press CLEAR.

4 Press OK.

If any timer settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The programme that starts first has priority and the second programme starts recording only after the first programme has finished. If the programmes start at the same time, the programme listed first in the menu has priority.



Bilingual programme

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO
Standard sound*	No indicator	No indicator

* Usually the main sound (monaural)

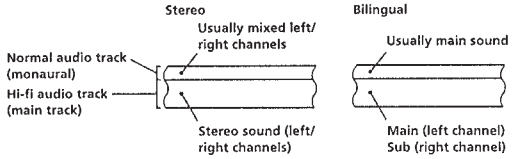
Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo/main and sub (left and right channels)	STEREO	STEREO
Left channel/main	LCH	STEREO
Right channel/sub	RCH	STEREO
Standard sound	No indicator	No indicator

How sound is recorded on a video tape

The VCR records sound onto two separate tracks. Hi-fi audio is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



Notes
- To listen to playback sounds in stereo, you must use the AUDIO OUT connections.
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- If the AUDIO MONITOR button does not function, check that AUDIO MIX in the SET UP MENU is set to OFF.
- If HIFI AUDIO is set to STD, the standard sound will be recorded on both the hi-fi and normal audio tracks. Pressing AUDIO MONITOR will not change the sound.

Recording stereo and bilingual programmes

In ZWEITON (German stereo) system

This VCR automatically receives and records stereo and bilingual programmes based on the ZWEITON system. When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To select bilingual sound while recording

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO

In NICAM system

This VCR receives and records stereo and bilingual programmes based on the NICAM system (the NICAM indicator appears). When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To record a NICAM programme, HIFI AUDIO in the SET UP MENU should be set to NICAM (initial setting). To check the menu setting, see page 61 for details.

To select the sound while recording

Press AUDIO MONITOR to select the sound you want.

Stereo programme

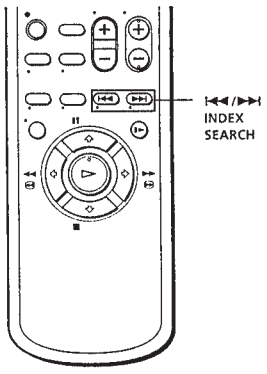
To listen to	On-screen display	Display window
Stereo	STEREO	STEREO
Standard sound*	No indicator	No indicator

* Usually the mixed sound of left and right channels (monaural)

continued

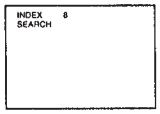
Searching using the index function

The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead of or behind the current position.



1 Insert an indexed tape into the VCR.

2 Press ⏮ / ⏭ INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search:
- To search ahead, press ⏭ INDEX SEARCH.
- To search backwards, press ⏮ INDEX SEARCH.



The VCR starts searching and the index number on the TV screen counts down to zero. The playback starts from the point about five seconds ahead of the specified index mark.

To stop searching

Press ■ STOP.

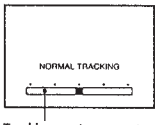
Note
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the channel during recording pause.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the ⊠ indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking.

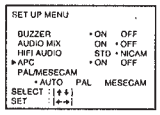
Press the TRACKING +/– buttons on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ⊠ indicator lights up). To resume automatic tracking adjustment, eject the tape and reinsert it.



Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the SET UP MENU (with the APC indicator in the display window lit).



APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the APC

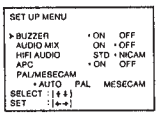
Press MENU and select SET UP MENU, then set APC to OFF. The APC indicator in the display window goes off.

Note

- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyses the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyse the tape (the APC indicator flashes rapidly). After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is cancelled.

Changing menu options

1 Press MENU, then select SET UP MENU.



2 Press ↑/↓ to select the option to change, then press ←/→ to change the setting.

3 Press OK to return to the original screen.

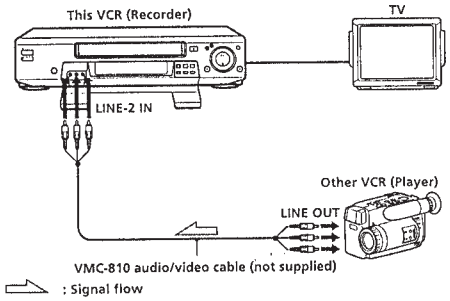
Menu choices

Initial settings are indicated in bold print.

Menu option	Set this option to
BUZZER	**ON** to output a beep sound when all illogical operation is made. OFF to deactivate it.
AUDIO MIX	ON to listen to the hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. OFF to listen to hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button.
HIFI AUDIO	STD to record standard sound on the hi-fi audio track. **NICAM** to record NICAM broadcasts on the hi-fi audio track. For details, see page 57.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality. OFF to switch off APC.
PAL/MESECAM	**AUTO** to have the VCR automatically select the colour system for recording and playback. If the picture has no colour or unusual colours, set to PAL or MESECAM according to your local colour system.

Connecting to a VCR or stereo system

How to connect to record on this VCR



How to connect to a stereo system

Connect LINE-1 IN, LINE-2 IN or LINE-3 IN AUDIO on the VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

Notes

- Make sure you connect the plugs to jacks of the same colour.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.

Tips

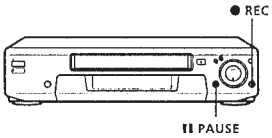
- If the other VCR is a monaural type and connected to this VCR's LINE-2 IN jacks, connect the audio plug to the AUDIO L (white) jack. The sound is recorded on both right and left channels. When connecting to the AUDIO R (red) jack, the sound is recorded only on the right channel.
- You can also use the LINE-1 IN or LINE-3 IN jacks instead. If the other VCR is a monaural type, the sound is recorded only on the channel whose jack is connected to the audio plug. To record on both right and left channels, connect the audio plugs to the AUDIO R/L jacks using a VMC-910MS audio/video cable (not supplied).

Basic editing

(when recording on this VCR)

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3 in the display window.
- Press SP/LP (SP/EP) to select the tape speed (SP or LP for the PAL system, and SP or EP for the NTSC system).



1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.

3 Press ● REC on this VCR and set it to recording pause.

4 To start editing, press the ❚❚ PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

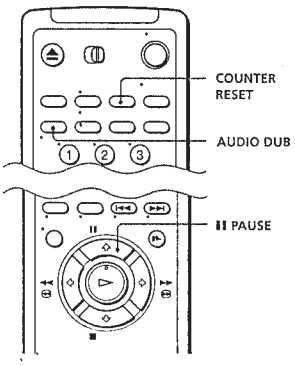
Tips

- To edit more precisely, press the ❚❚ PAUSE buttons on the VCRs to release pause.
- To cut out unwanted scenes while editing, press ❚❚ PAUSE on this VCR when an unwanted scene begins. When it ends, press ❚❚ PAUSE again to resume recording.

Note

- If you start recording following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyses the tape. Then when you start recording in step 4, press ❚❚ PAUSE after the APC indicator stops flashing. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is cancelled.

Audio dubbing



This feature lets you record over the normal audio track. The monaural sound previously recorded is placed while the original hi-fi sound remains unchanged. Use this feature to add commentary to a tape that you have recorded with a camcorder.

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the display window.

1 Insert a source tape into the stereo system (or the playback VCR). Search for the point to start playback and set it to playback pause.

2 Insert a prerecorded tape into this (recording) VCR. Search for the end of the section to be replaced and press II PAUSE.
Make sure that the tape has its safety tab in place.

3 Press COUNTER RESET on this remote commander to reset the counter to "0:00:00."

4 Rewind the prerecorded tape to the beginning of the section to be replaced.

The VCR pauses.

5 Press AUDIO DUB.

The ⊖ indicator appears in the display window.

6 To start editing, press the II PAUSE buttons on this VCR and the stereo system (or other VCR) at the same time.

When the counter reaches "0:00:00" audio dubbing stops automatically.

To stop while editing

Press the ■ STOP buttons on this VCR and the stereo system (or other VCR).

To listen to both the hi-fi and normal audio

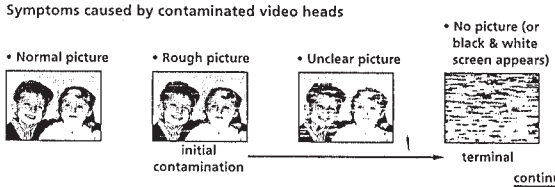
Set AUDIO MIX to ON in the SET UP MENU (page 61). Use this feature to listen to dubbed audio over the original hi-fi audio. When AUDIO MIX is set to ON, the AUDIO MONITOR button does not function. Remember to reset AUDIO MIX to OFF after playing the tape.

Troubleshooting

If you have any questions or problems not covered below, please consult your nearest Sony service facility.

	Symptom	Remedy
Power	The ON/STANDBY switch does not function.	• Connect the mains lead to mains securely.
	The power is turned on but the VCR does not operate.	• Moisture condensation occurs. Turn the power off, unplug the mains lead and leave the VCR to dry for over one hour.
Clock	The clock has stopped and "–:––" lights in the display window.	• The clock stops if the VCR is disconnected from the mains for more than an hour. Reset the clock (and timer).
Playback	The playback picture does not appear on the TV screen.	• Make sure the TV is set to the video channel. If you are using a monitor, set it to video input.
	The playback picture has no colour or unusual colours.	• Set the PAL/MESECAM option in the SET UP MENU according to your local colour system.
	The picture is not clear.	• Adjust the tracking with the TRACKING +/– buttons. • Make sure the colour system is set to the system that the tape was recorded in. • The video heads are dirty (see below). Clean the video heads using the Sony T-25CLD, T-25CLW and E-25CLDR video head cleaning cassette. If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required). Do not use a commercially available liquid type cleaning cassette, as they may damage the video heads. • The video heads may have to be replaced. Consult your local Sony service facility for more information.
	The picture rolls vertically during picture search.	• Adjust the vertical hold control on the TV or monitor.
	The picture has no sound.	• The tape is defective. • If you made A/V connections, check the audio cable connection.
	The sound is unstable or has an echo.	• When you play a tape with the same sound recorded on both the hi-fi and normal sound tracks, make sure the AUDIO MIX option in the SET UP MENU is set to OFF.

Symptoms caused by contaminated video heads



continued

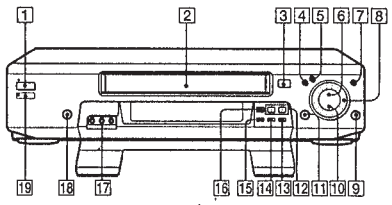
Troubleshooting (continued)

	Symptom	Remedy
Recording	No TV programmes appear on the TV screen.	• Make sure the TV is set to the video channel. If you are using a monitor, set it to video input.
	TV reception is poor.	• Adjust the TV aerial. • Make sure SYSTEM (B/G, D/K, I or M) in the TUNER PRESET menu is set to the system in your area.
	The recorded picture has no colour or unusual colours.	• Set the PAL/MESECAM option in the SET UP MENU according to your local colour system.
	The tape starts playing as soon as it is inserted.	• The safety tab has been removed. To record on this tape, cover the tab hole.
	The tape is ejected when you press ● REC.	• Check that the safety tab has not been removed.
	Nothing happens when you press ● REC.	• Make sure the tape is not at its end. • Select the correct source with the INPUT SELECT or PROG +/– buttons. Select a programme position when recording TV programmes; select "L1", "L2" or "L3" when recording from other equipment.
Timer recording	The timer does not operate.	• Check that the clock is set. • Make sure a tape has been inserted. • Check that the safety tab has not been removed. • Make sure the tape is not at its end. • Make sure a programme has been set for timer recording. • Make sure your timer settings have not already passed the current time. • Check that the satellite tuner is turned on. • The clock stops if the VCR is disconnected from the mains for more than an hour. Reset the clock and timer.
Others	A tape cannot be inserted.	• Check that a tape isn't already in the tape compartment.
	The remote commander does not function.	• Make sure you are pointing the remote commander at the remote sensor on the VCR. • Replace all the batteries in the remote commander with new ones if they are weak. • Make sure the TV / VIDEO remote control switch is set correctly.
	The tracking meter does not appear on the screen.	• The recording condition of the tape is very poor and tracking cannot be adjusted.
	The VCR needs to be cleaned.	• Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine.

Index to parts and controls

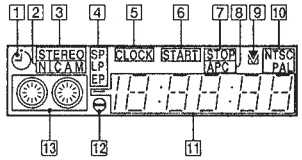
Refer to the pages indicated in parentheses ( ) for details.

Front panel



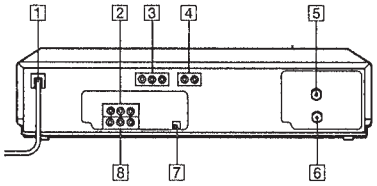
1 ON/STANDBY switch/indicator (11)
2 Tape compartment
3 ⏏ EJECT button (38)
4 ◄◄ REW (rewind) button (38, 52)
5 ►► FF (fast-forward) button (38, 52)
6 ▷ PLAY button (38, 52)
7 JOG button/indicator (53)
8 CLICK JOG SHUTTLE ring (52)
9 ● REC (record) button (42)
10 ■ STOP button (38)
11 II PAUSE button (38)
12 PROGRAM/TRACKING +/– buttons (12, 60)
13 COLOR SYSTEM button (38)
14 SP (Standard Play)/LP (Long Play)/EP (Extra Play) button (42)
15 ONE TOUCH TUNING/RF (Radio Frequency) CHANNEL button (11, 14)
16 EASY TIMER button (44)
17 LINE-2 IN VIDEO/AUDIO L/R jacks (62)
18 OPEN button (11, 14)
19 Remote sensor (5)

Display window



1 Timer indicator (45, 48)
2 NICAM indicator (57)
3 STEREO indicator (57)
4 Tape speed indicator (42)
5 CLOCK indicator (44)
6 START indicator (45)
7 STOP indicator (45)
8 APC (Adaptive Picture Control) indicator (60)
9 Tracking indicator (60)
10 Colour system indicator (38)
11 Time counter/clock/line/programme/TV system indicator (12, 39, 41, 45, 63)
12 Audio dubbing indicator (64)
13 Tape/recording indicator (42)

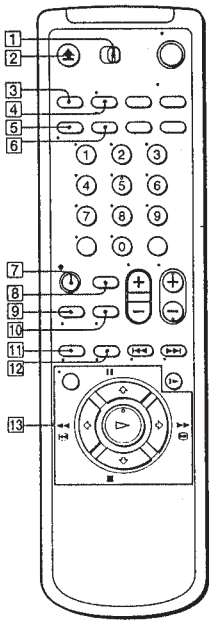
Rear panel



1 Mains lead (9)
2 LINE-1 IN AUDIO R/L/VIDEO jacks (62)
3 LINE-3 IN (SAT IN) AUDIO R/L/VIDEO jacks (10)
4 LINE-2 OUT AUDIO R/L jacks (10)
5 AERIAL IN connector (9)
6 AERIAL OUT connector (9)
7 NTSC PB (playback) switch (10, 38)
8 LINE-1 OUT AUDIO R/L/VIDEO jacks (9)

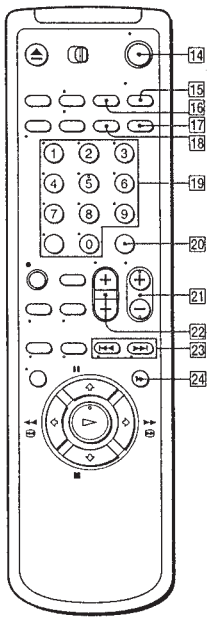
continued

Remote commander



1 TV / VIDEO remote control switch (5)
2 ⏏ EJECT button (38)
3 TRINITRON TV SYNCHRO PLAY button (40)
4 DISPLAY button (39, 42)
5 AUDIO DUB (dubbing) button (64)
6 TV/VIDEO button *(for TV)* (6)
7 ● REC (record) button (42)
8 EASY TIMER button (44)
9 SP (Standard Play)/LP (Long Play)/EP (Extra Play) button (42)
10 QUICK TIMER button (54)
11 INPUT SELECT button (43, 51)
12 ×2 button (52)
13 Tape/menu operation buttons

MENU button (13, 61)
II PAUSE/↑ button (38)
■ STOP/↓ button (38)
◀◀ ⊖ REW (rewind)/
← button (38, 52)
▶▶ ⊕ FF (fast-forward)/
→ button (38, 52)
▷ PLAY/OK button (38)

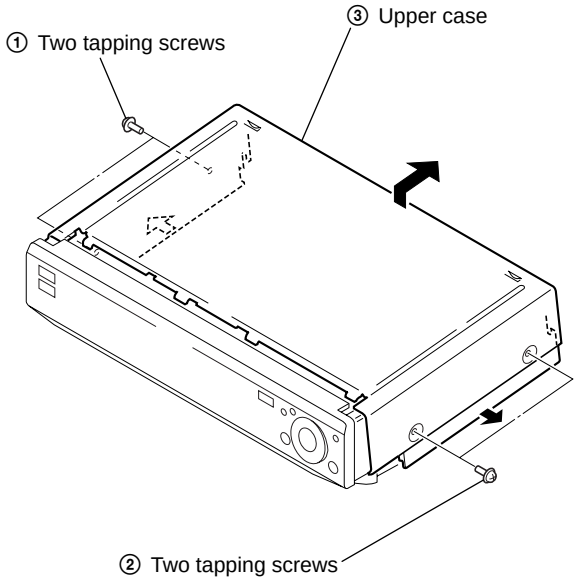


14 ON/STANDBY switch (48, 51)
15 AUDIO MONITOR button (57)
16 COUNTER RESET button (39)
17 G-CODE button (47)
18 CLEAR button (48)
19 Programme number/-/-- (ten's digit) buttons (43, 45, 48)
20 SET button (48)
21 PROG (programme) +/– buttons (41)
22 VOL (volume) +/– buttons *(for TV)* (6)
23 I◀◀ / ▶▶I INDEX SEARCH buttons (59)
24 ▮▻ SLOW button (52)

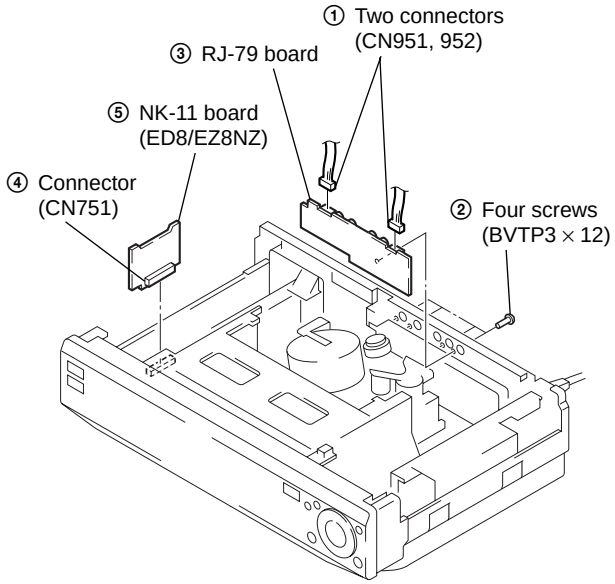
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

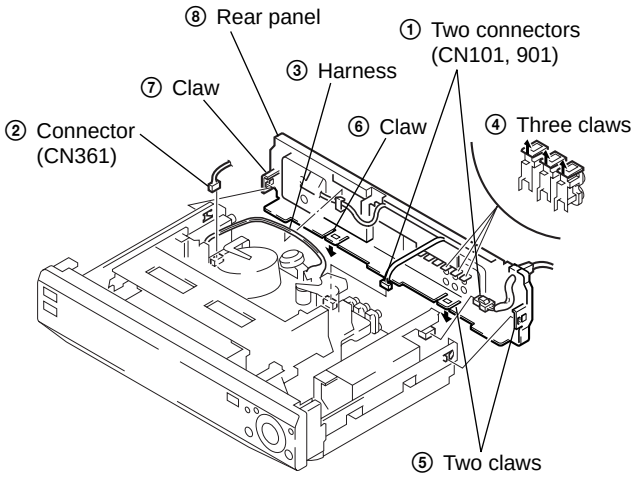
2-1. UPPER CASE REMOVAL



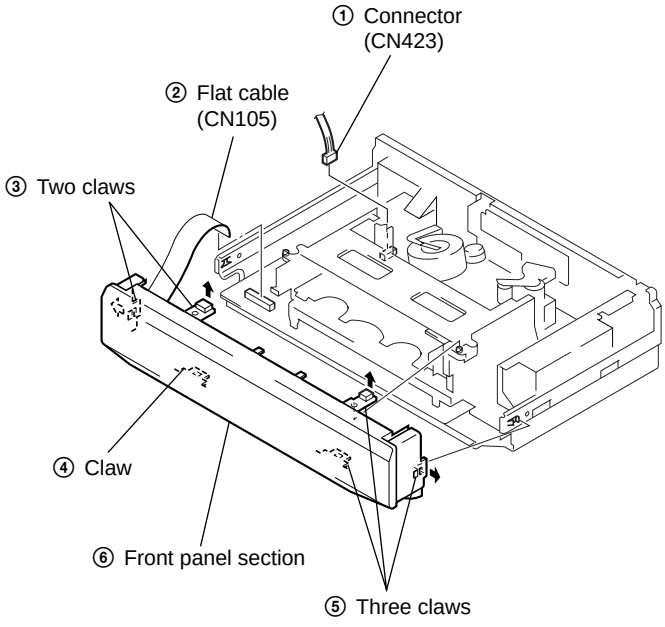
2-2. RJ-79, NK-11 BOARD REMOVAL



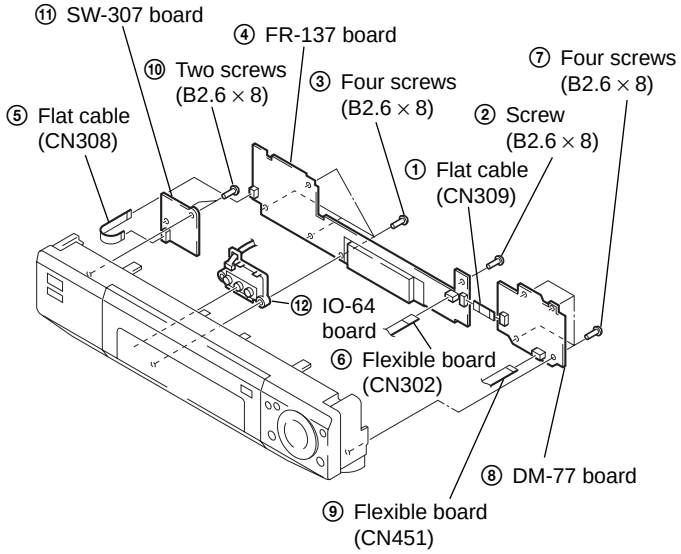
2-3. REAR PANEL REMOVAL



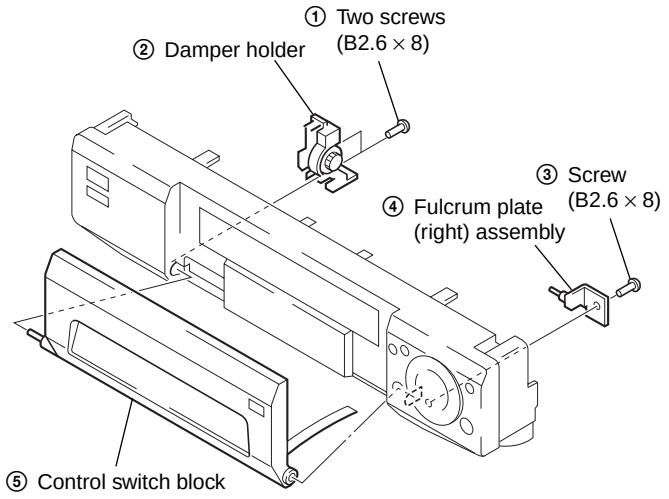
2-4. FRONT PANEL SECTION REMOVAL



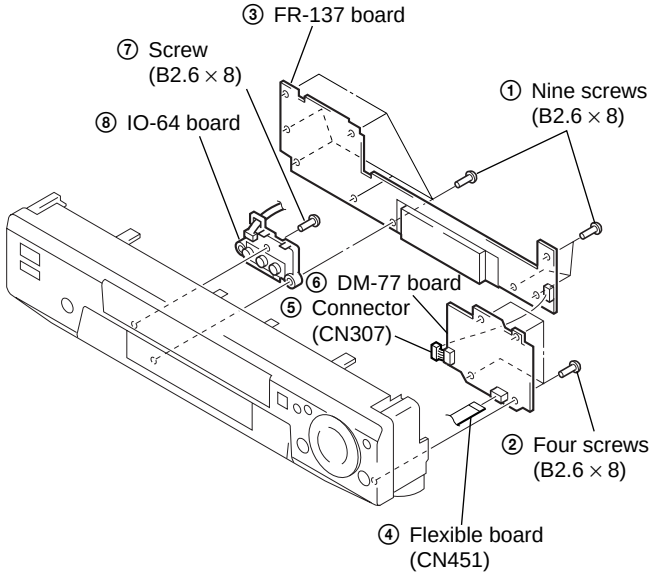
2-5. FR-137, DM-77, SW-307, IO-64 BOARD REMOVAL (EZ9)


⑪ SW-307 board
④ FR-137 board
⑩ Two screws (B2.6 × 8)
③ Four screws (B2.6 × 8)
⑦ Four screws (B2.6 × 8)
⑤ Flat cable (CN308)
② Screw (B2.6 × 8)
① Flat cable (CN309)
⑫ IO-64 board
⑥ Flexible board (CN302)
⑧ DM-77 board
⑨ Flexible board (CN451)

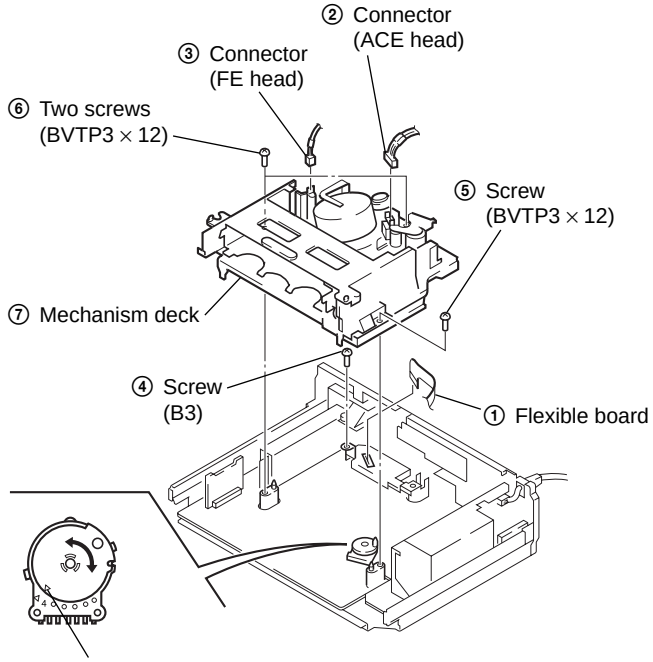
2-6. CONTROL SWITCH BLOCK REMOVAL (EZ9)



2-7. FR-137, DM-77, IO-64 BOARD REMOVAL (ED8/EZ8)

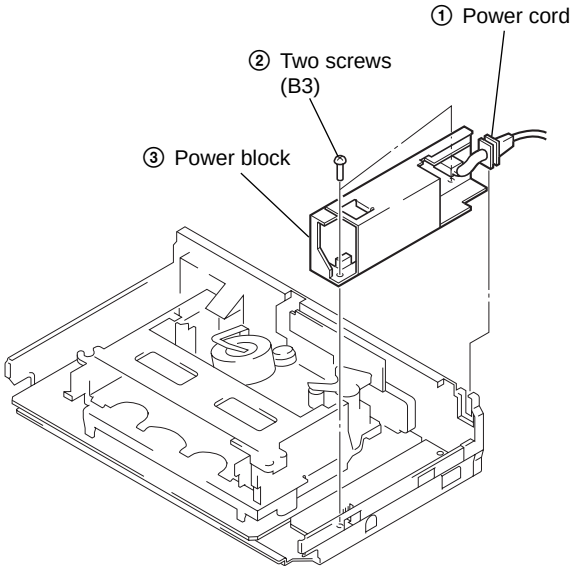

③ FR-137 board
⑦ Screw (B2.6 × 8)
① Nine screws (B2.6 × 8)
⑧ IO-64 board
⑥ DM-77 board
⑤ Connector (CN307)
② Four screws (B2.6 × 8)
④ Flexible board (CN451)

2-8. MECHANISM DECK REMOVAL

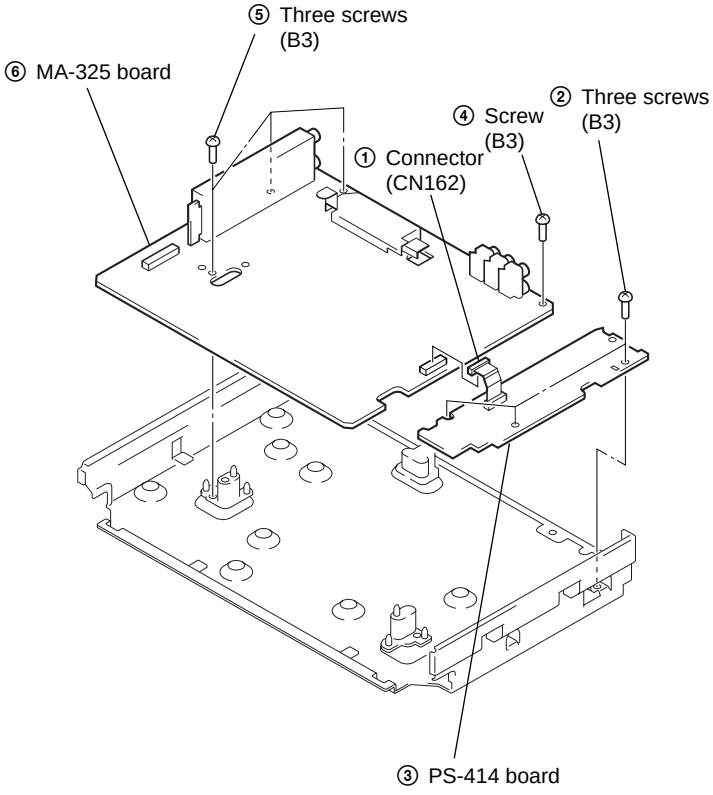


Note: When mounting the mechanism deck, first align △ mark on the rotary switch.

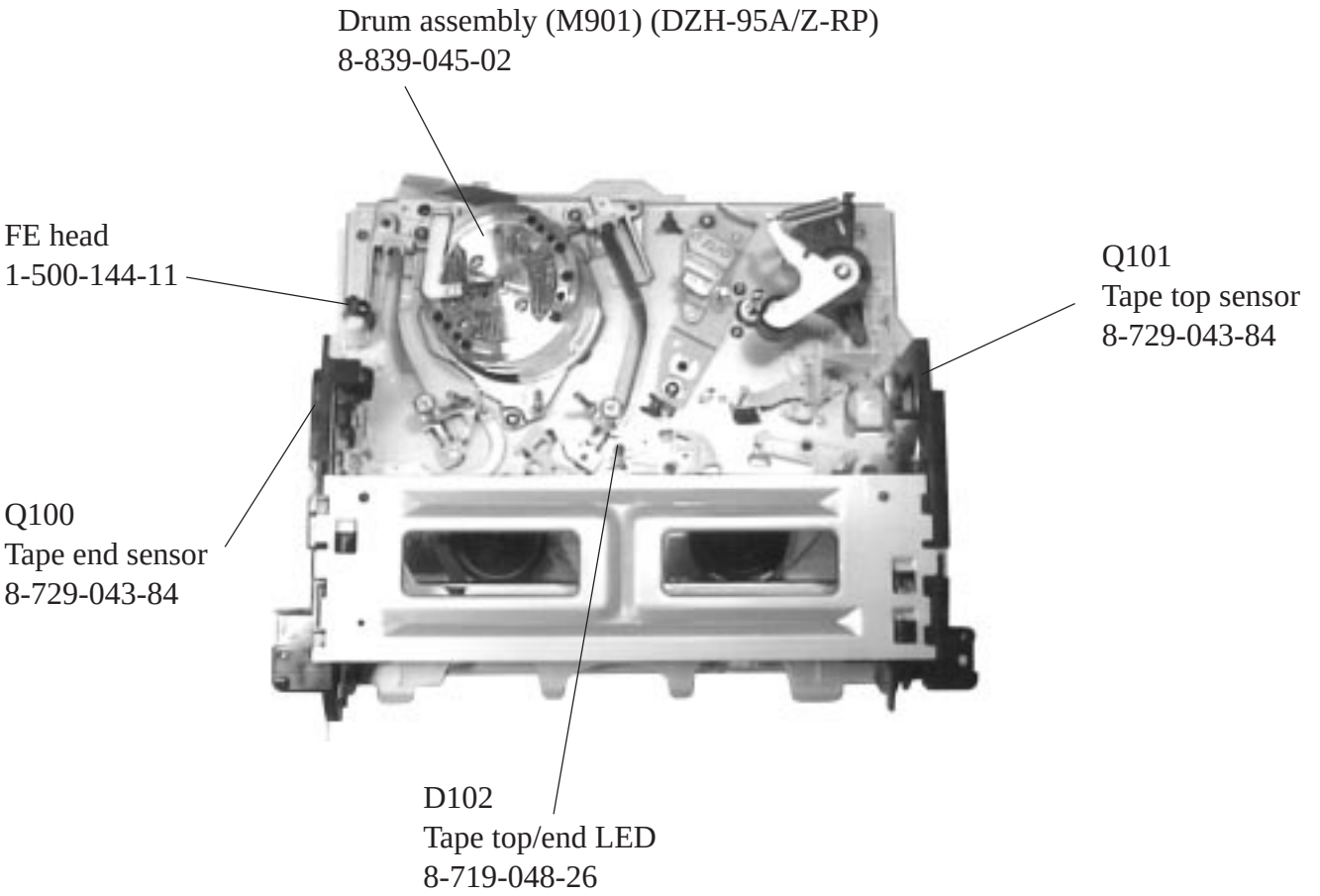
2-9. POWER BLOCK REMOVAL

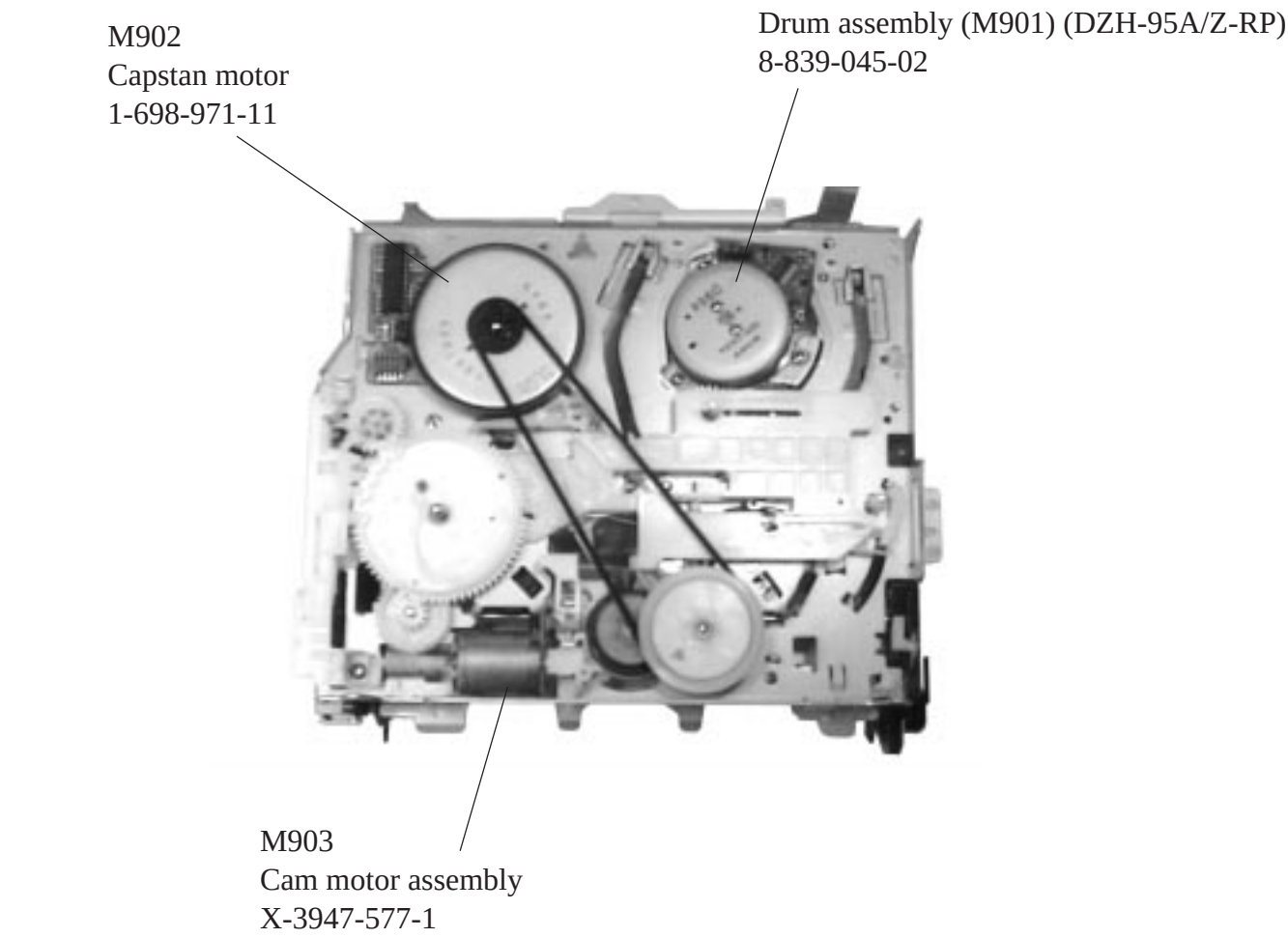


2-10. PS-414, MA-325 BOARD REMOVAL

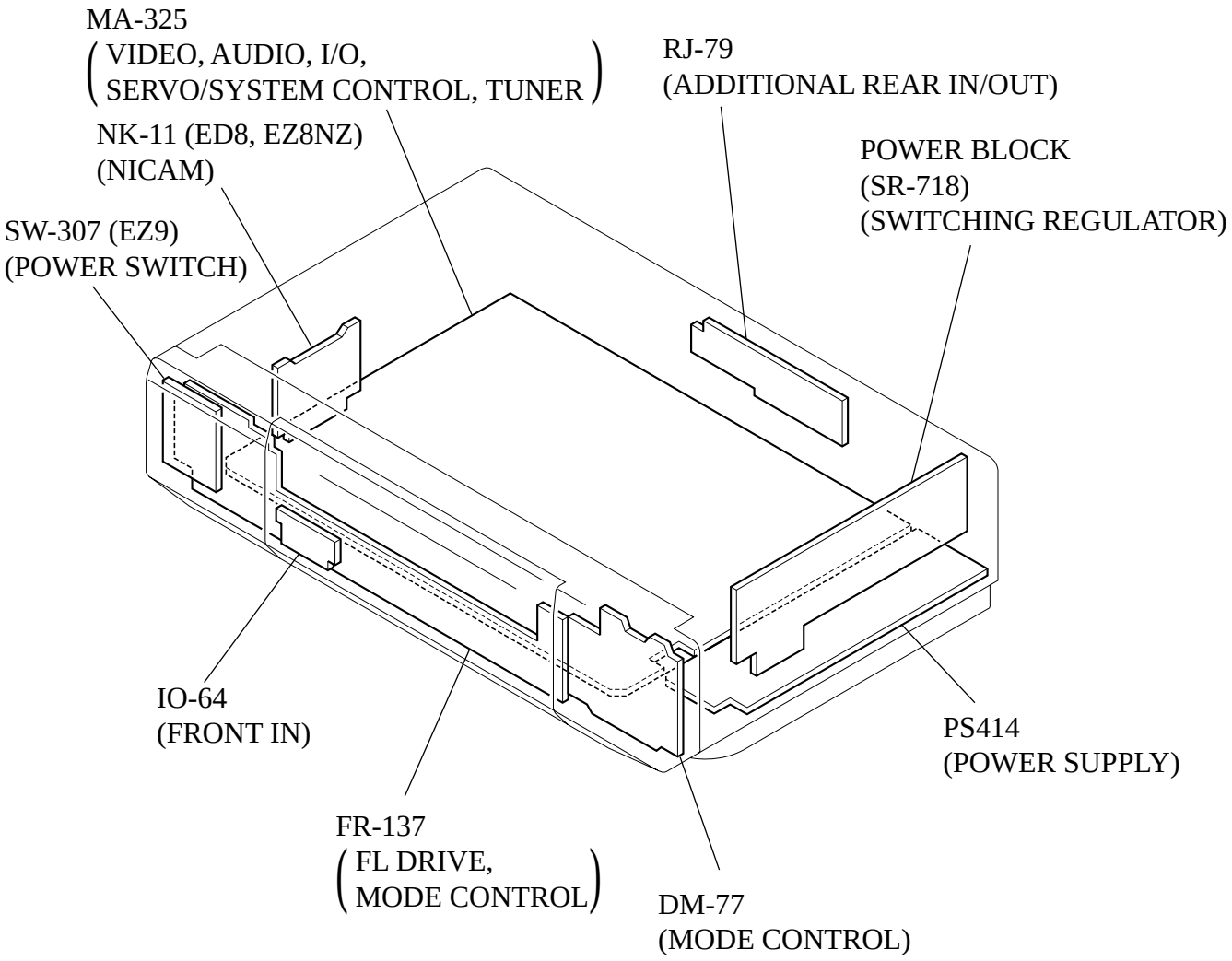


2-11. INTERNAL VIEWS



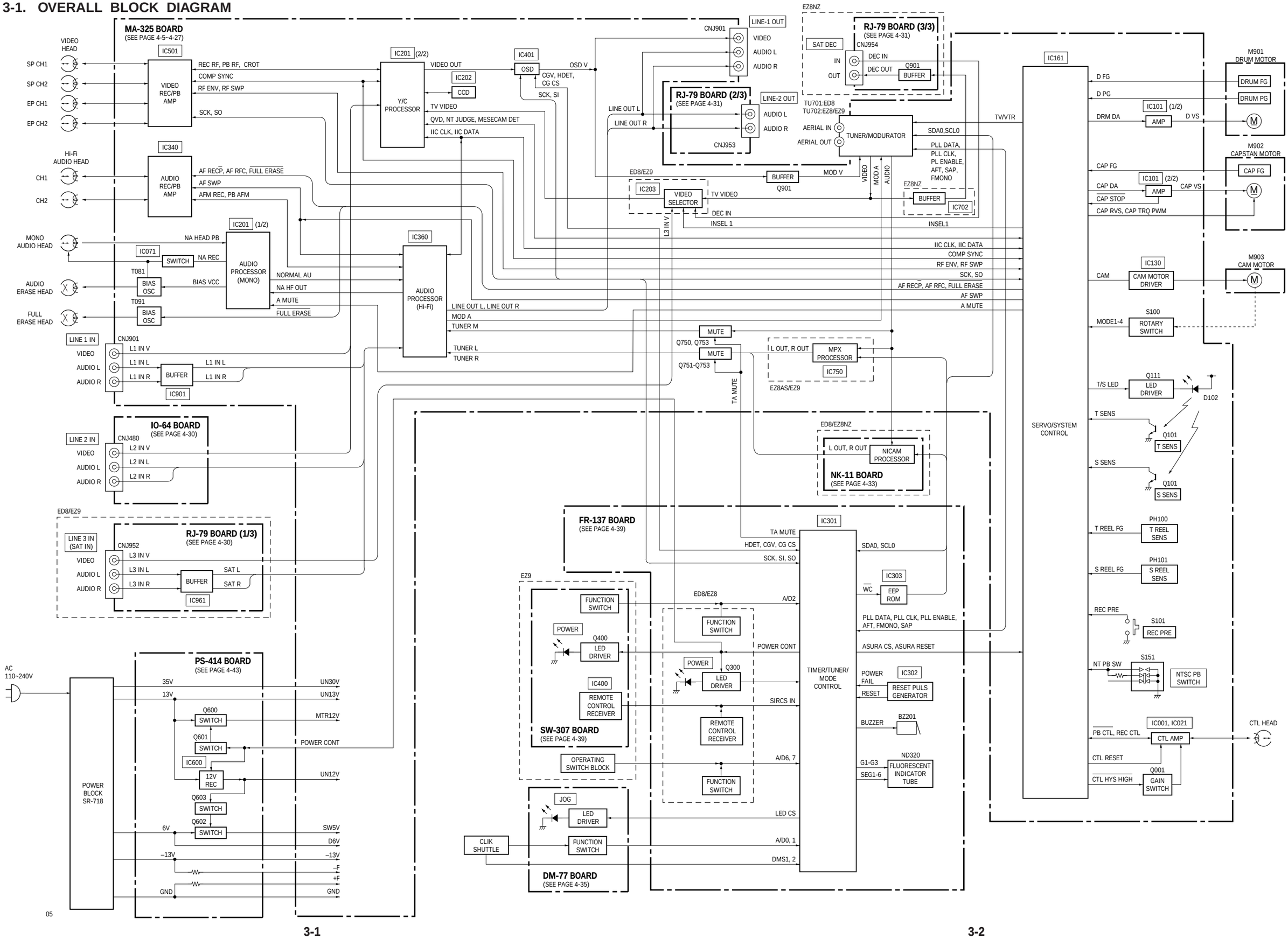


2-12. CIRCUIT BOARDS LOCATION

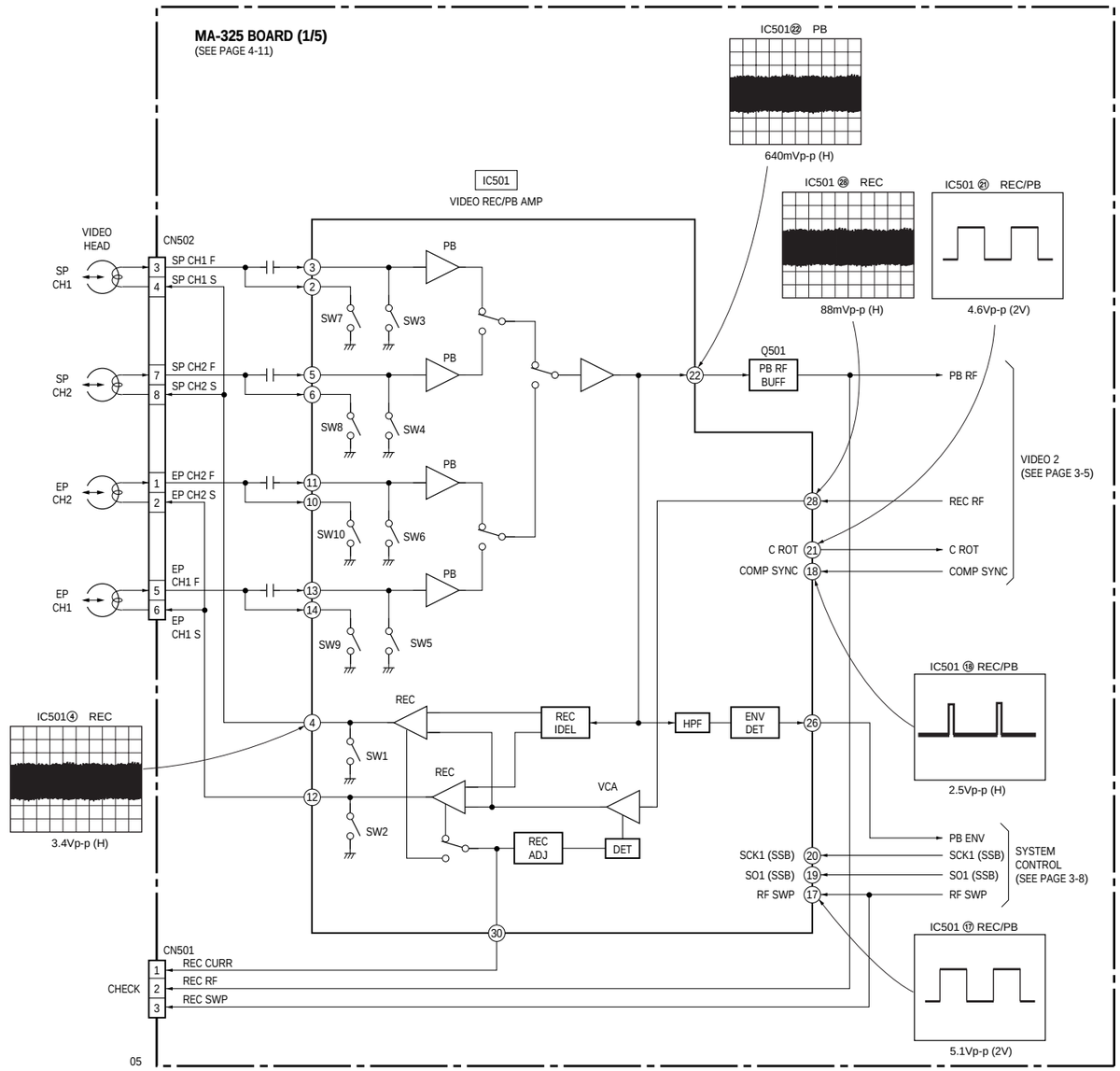


SECTION 3
BLOCK DIAGRAM

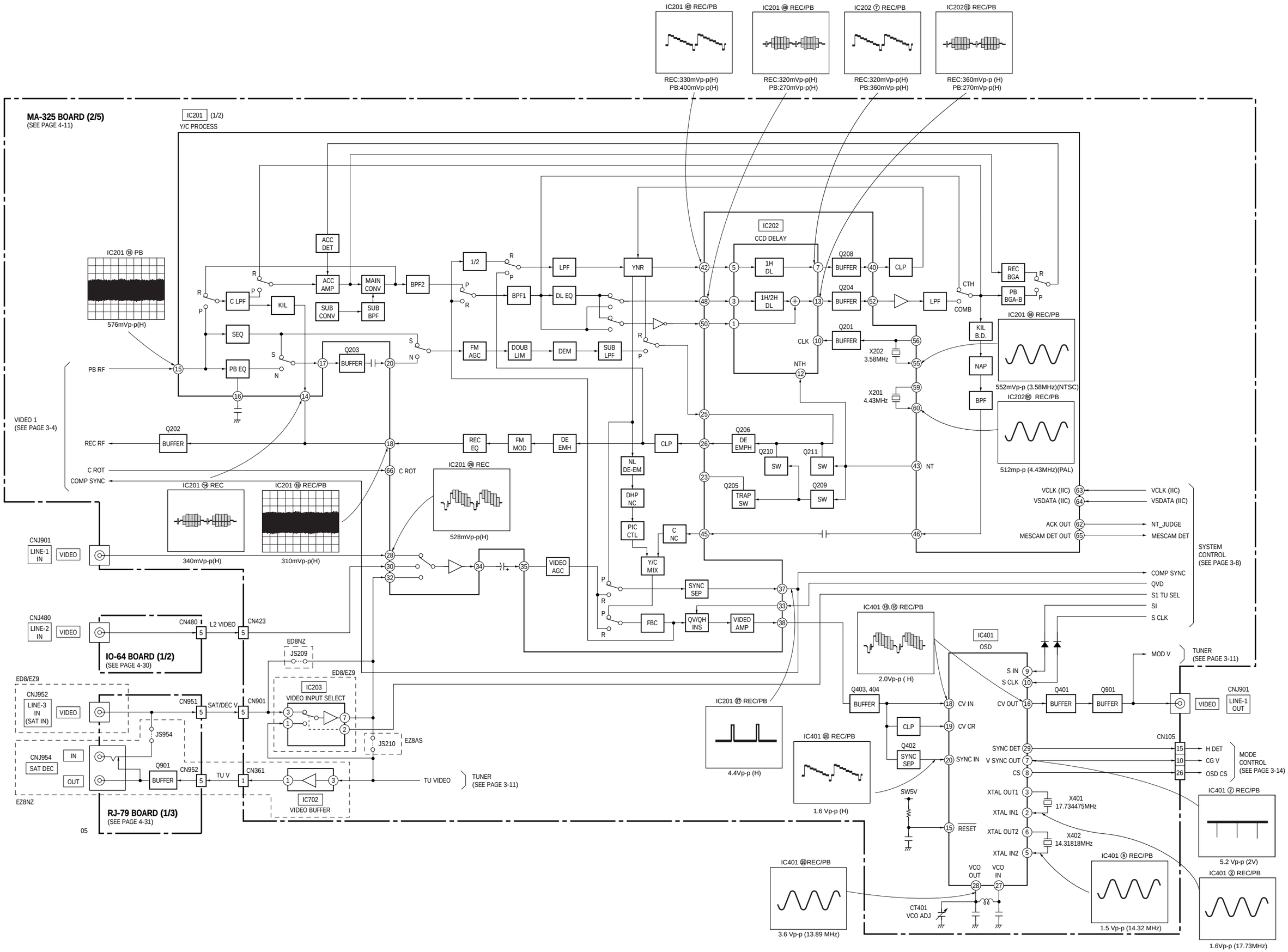
3-1. OVERALL BLOCK DIAGRAM



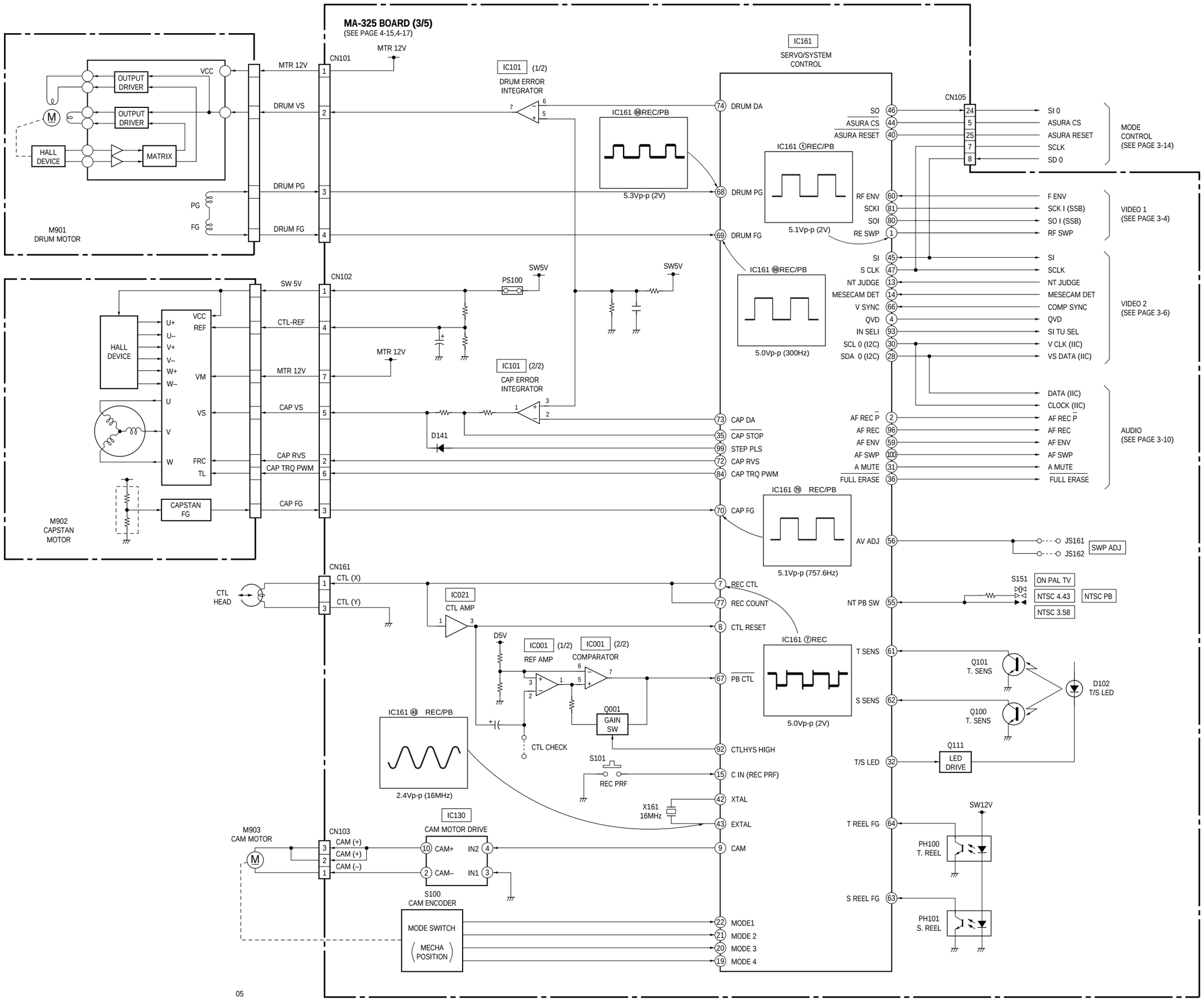
3-2. VIDEO1 BLOCK DIAGRAM



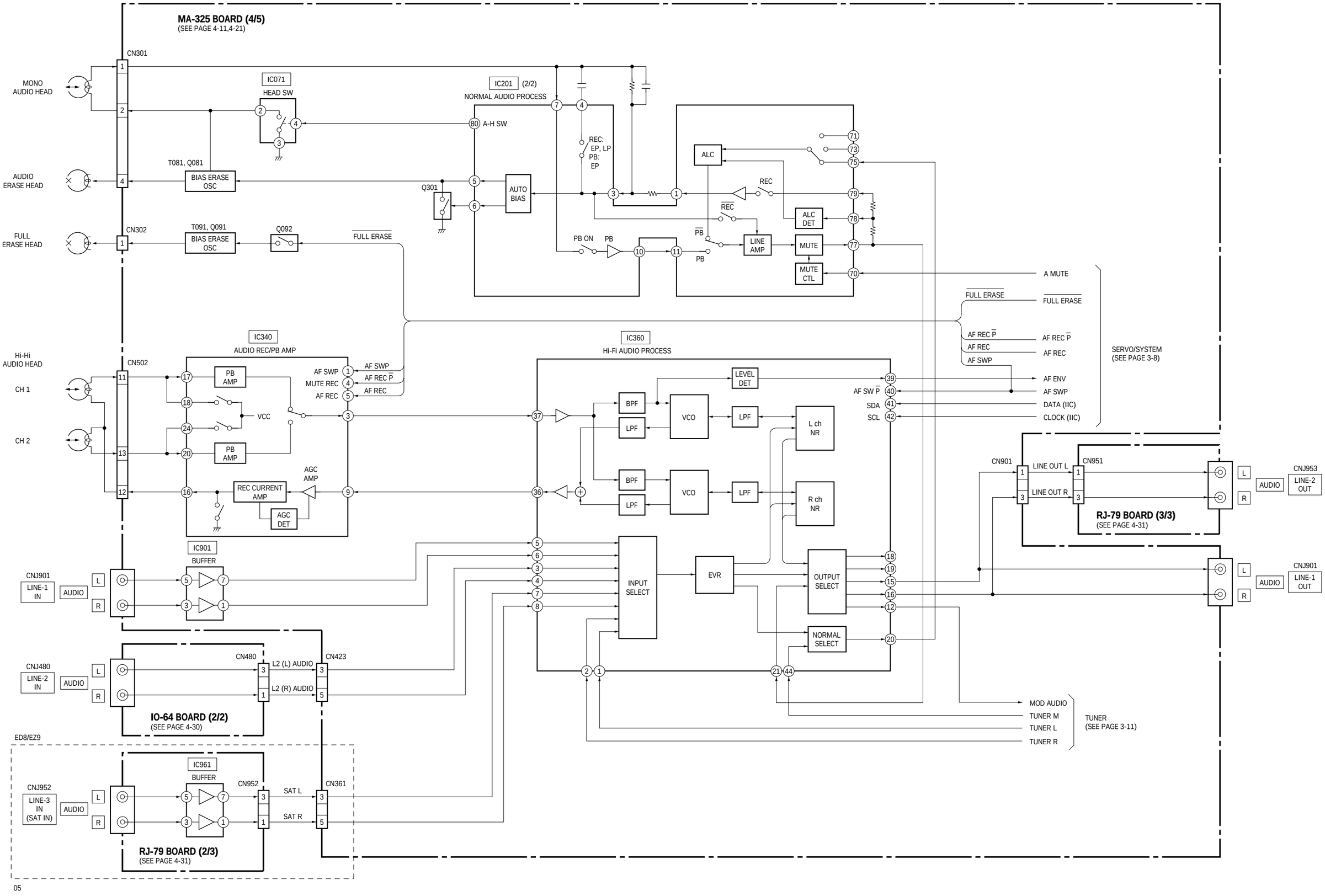
3-3. VIDEO2 BLOCK DIAGRAM



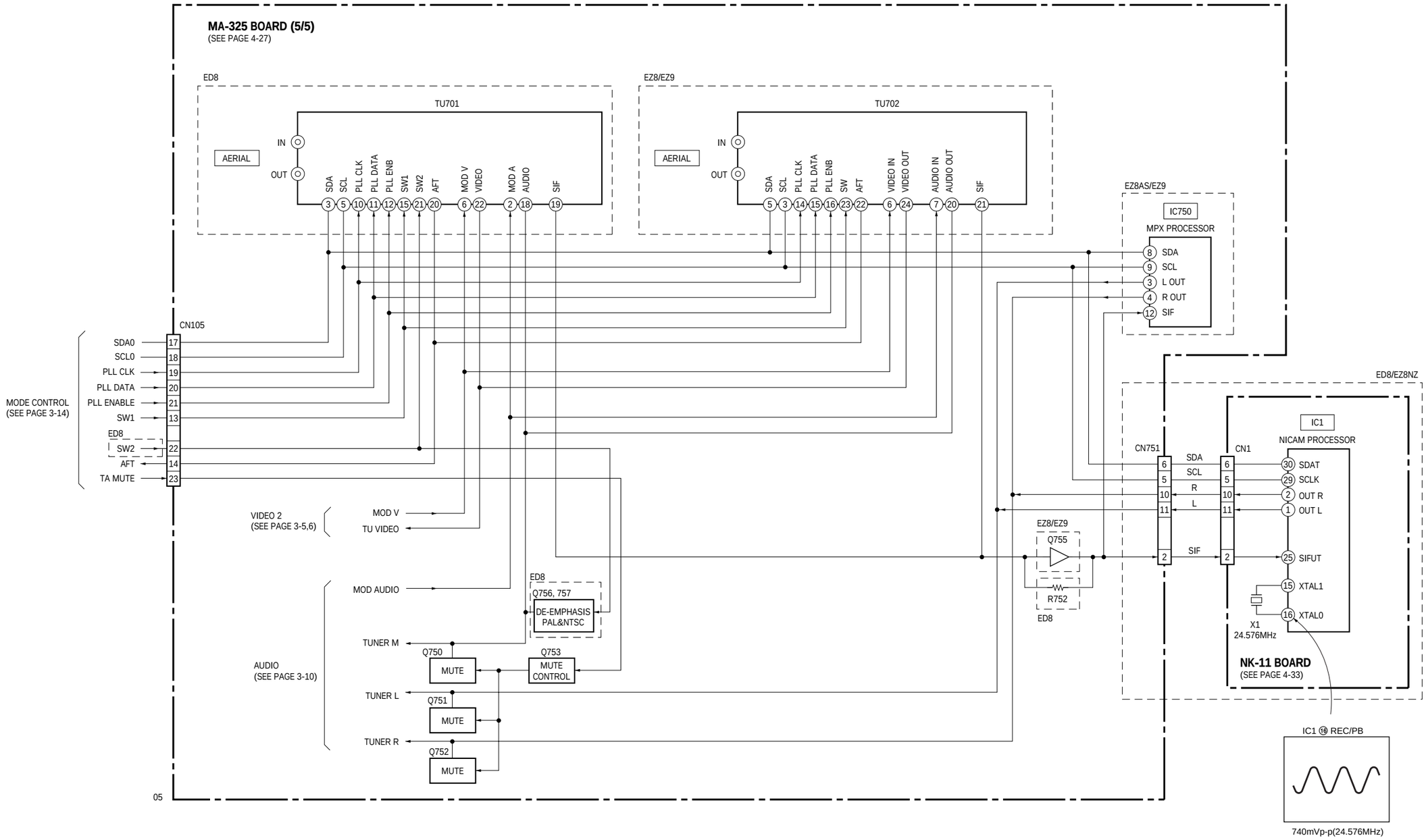
3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM



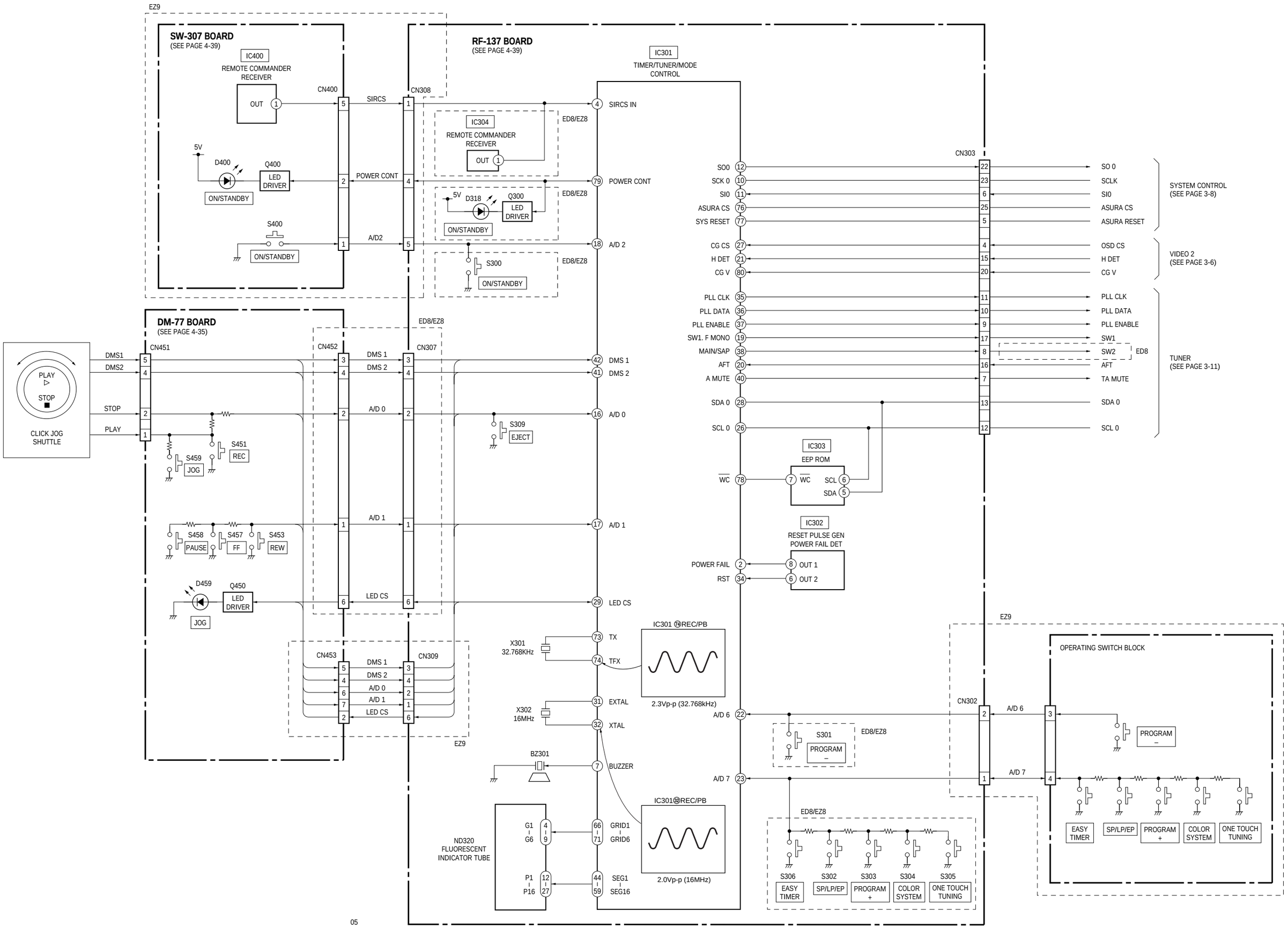
3-5. AUDIO BLOCK DIAGRAM



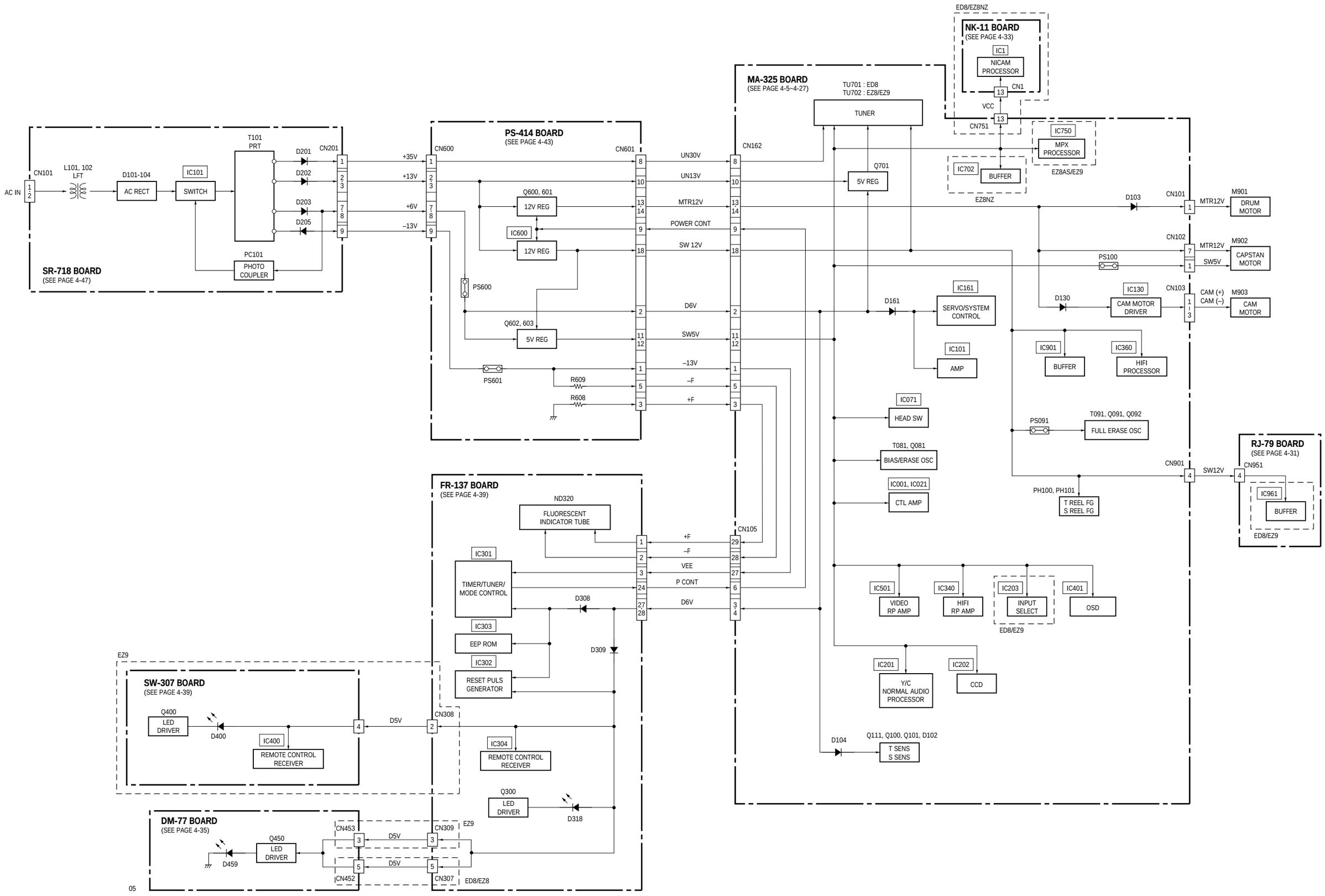
3-6. TUNER BLOCK DIAGRAM



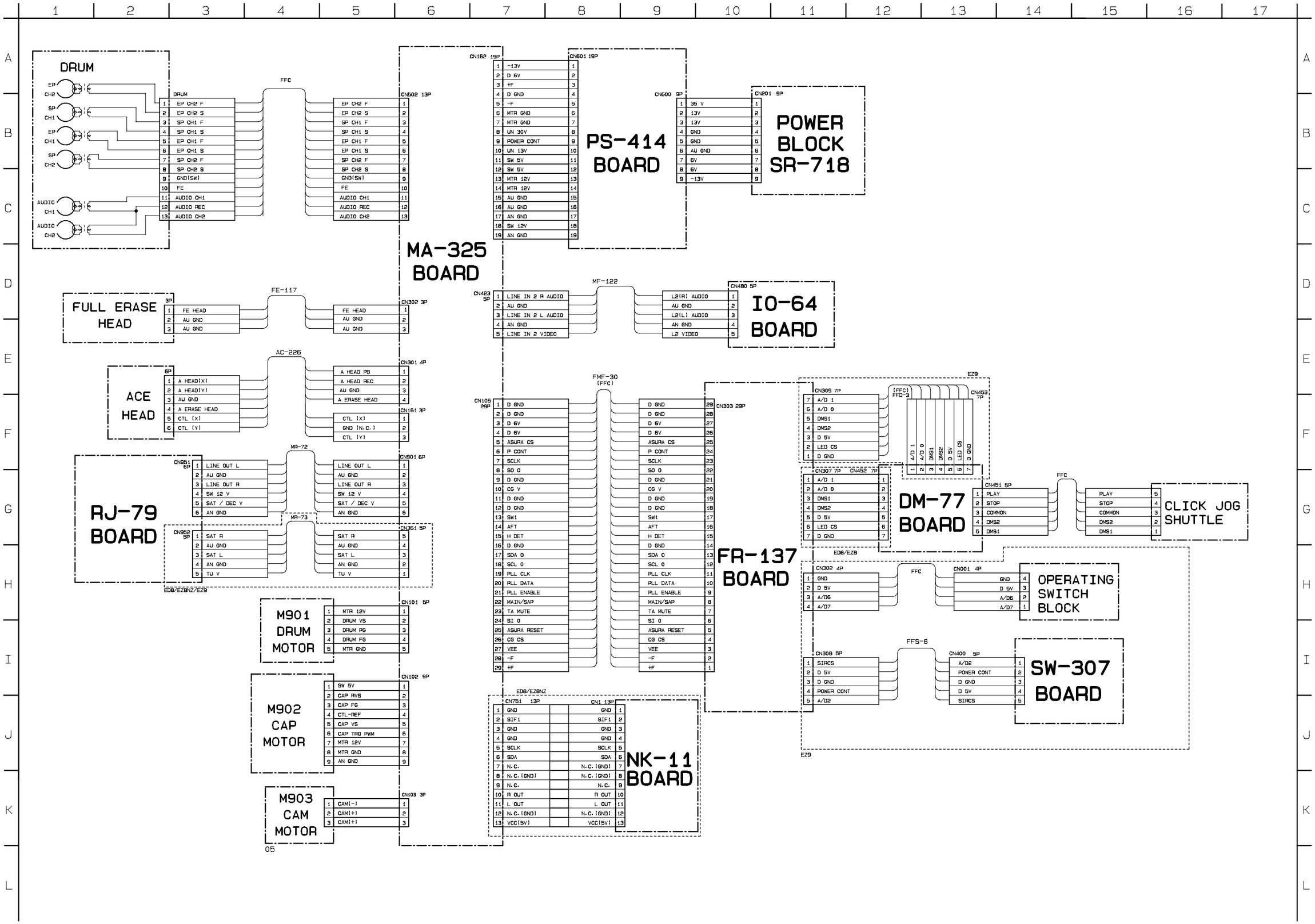
3-7. MODE CONTROL BLOCK DIAGRAM



3-8. POWER BLOCK DIAGRAM



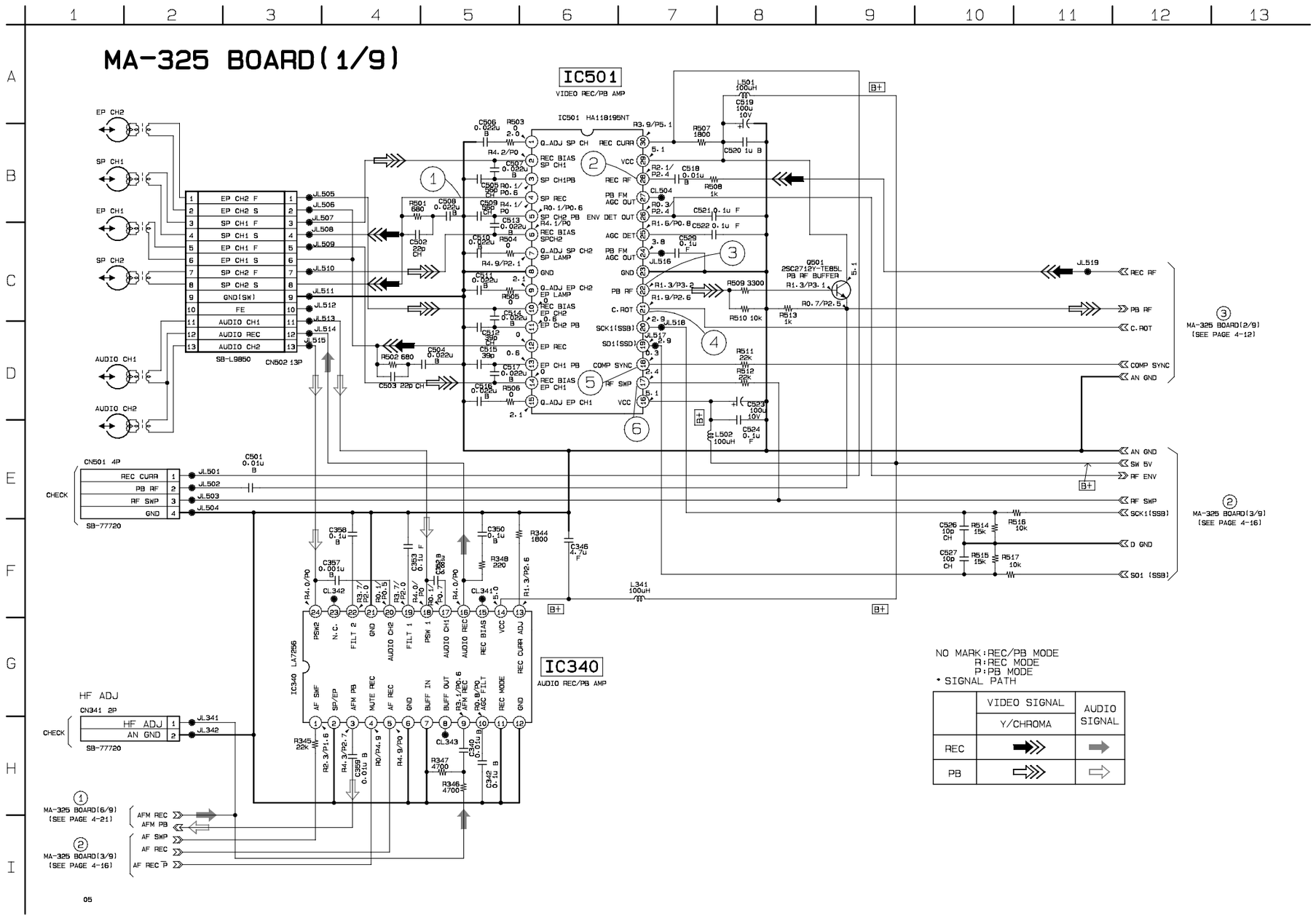
4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

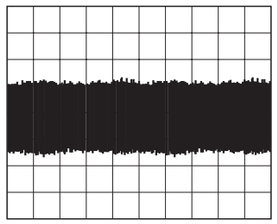
MA-325 (HEAD AMP) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-325 board; 2,000 series –



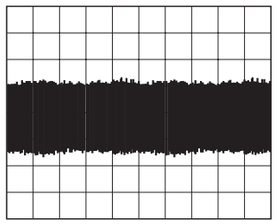
• Waveforms

❶ IC501 ④ REC



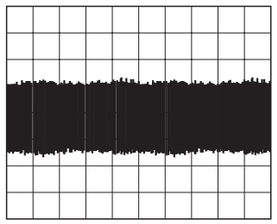
3.4 Vp-p (H)

❷ IC501 ㉘ REC



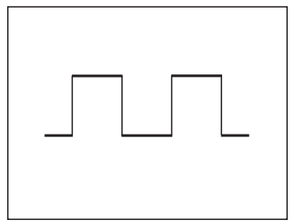
88 mVp-p (H)

❸ IC501 ㉒ PB



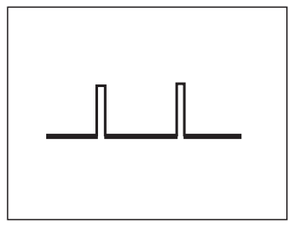
640 mVp-p (H)

❹ IC501 ㉑ REC/PB



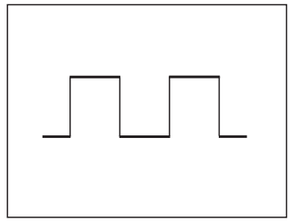
4.6 Vp-p (2 V)

❺ IC501 ⑱ REC/PB



2.5 Vp-p (H)

❻ IC501 ⑰ REC/PB

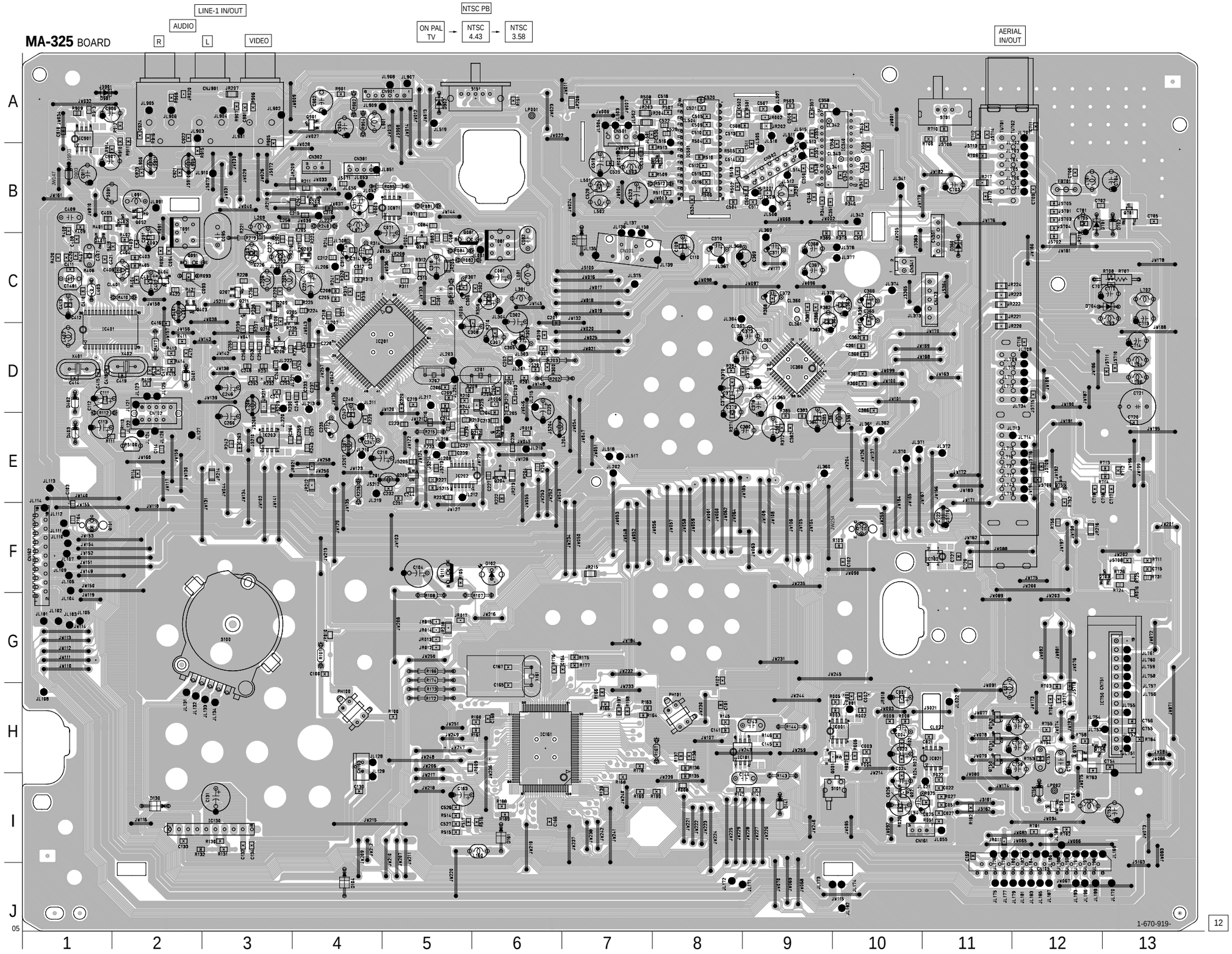


5.1 Vp-p (2 V)

MA-325 (VIDEO, AUDIO, I/O, SERVO/SYSTEM CONTROL, TUNER) PRINTED WIRING BOARD

– Ref. No.: MA-325 board; 2,000 series –

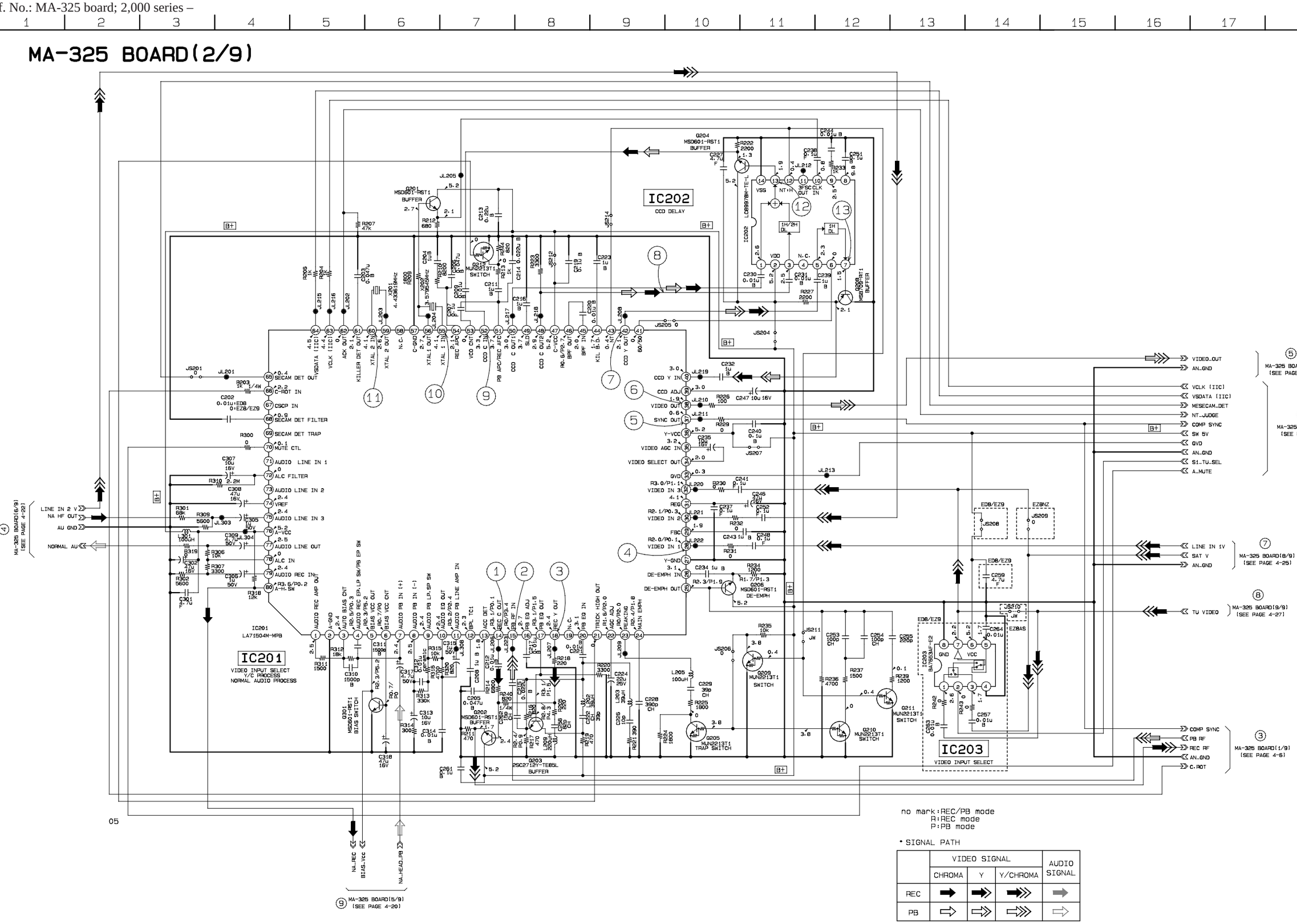
There are few cases that the part isn't mounted in this model is printed on this diagram.



MA-325 (VIDEO, AUDIO) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-325 board; 2,000 series –

MA-325 BOARD(2/9)



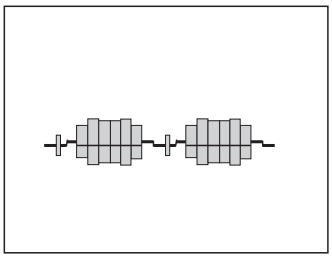
no mark:REC/PB mode
R:REC mode
P:PB mode

* SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

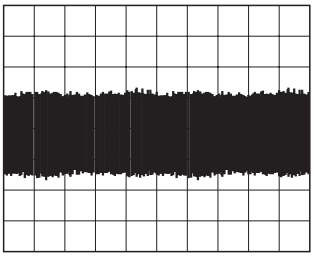
• Waveforms

❶ IC201 ⑭ REC



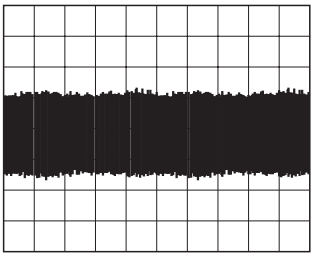
340 mVp-p (H)

❷ IC201 ⑮ PB



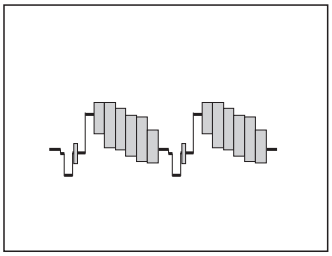
576 mVp-p (H)

❸ IC201 ⑱ REC



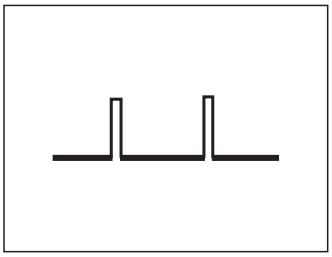
310 mVp-p (H)

❹ IC201 ㉘ REC



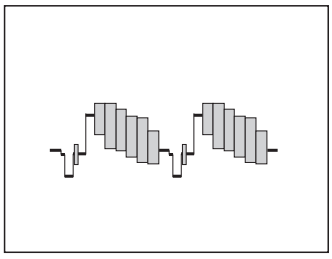
528 mVp-p (H)

❺ IC201 ㊲ REC/PB



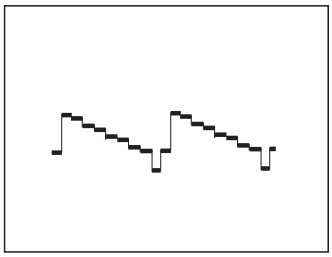
4.4 Vp-p (H)

❻ IC201 ㊳ REC/PB



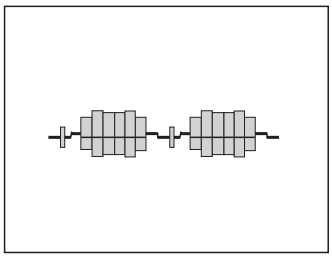
2.0 Vp-p (H)

❼ IC201 ㊷ REC/PB



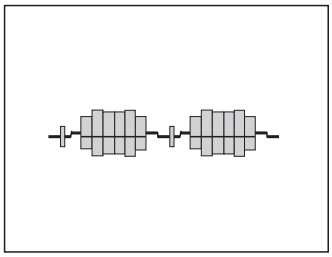
REC : 330 mVp-p (H)
PB : 400 mVp-p (H)

❽ IC201 ㊽ REC/PB



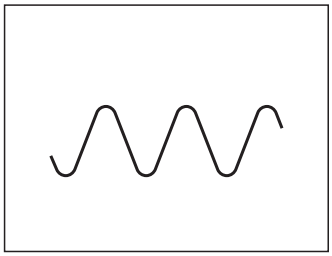
REC : 320 mVp-p (H)
PB : 270 mVp-p (H)

❾ IC201 ㊷ REC/PB



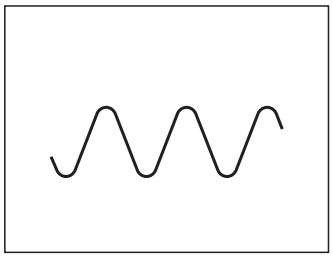
REC : 340 mVp-p (H)
PB : 270 mVp-p (H)

❿ IC201 ㊺ REC/PB



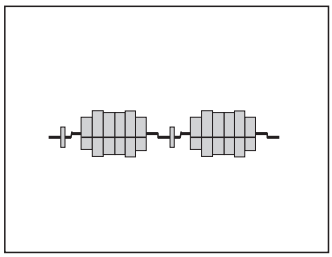
552 mVp-p (3.58 MHz) (NTSC)

⓫ IC201 ㊿ REC/PB



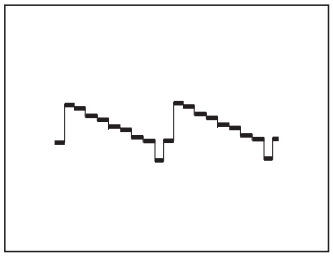
512 mVp-p (4.43 MHz) (PAL)

⓬ IC202 ⑬ REC/PB



REC : 360 mVp-p (H)
PB : 270 mVp-p (H)

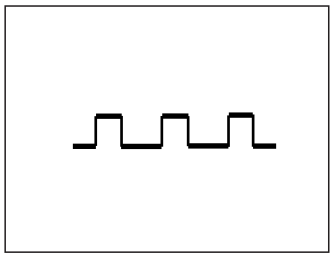
⓭ IC202 ⑦ REC/PB



REC : 320 mVp-p (H)
PB : 360 mVp-p (H)

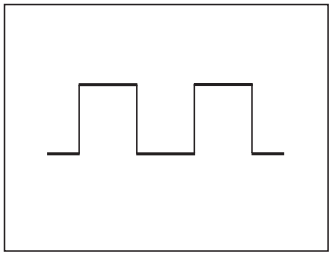
• **Waveforms**

❶ IC161 ㊽ REC/PB



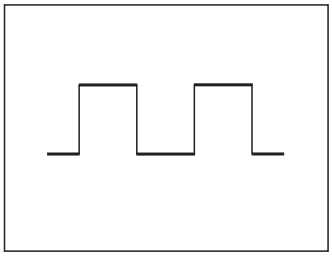
5.3 Vp-p (2 V)

❷ IC161 ㊾ REC/PB



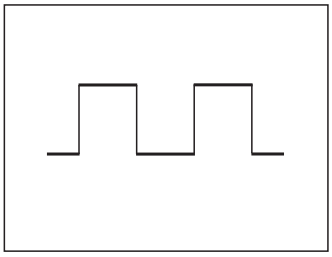
5.0 Vp-p (300 Hz)

❸ IC161 ㊿ REC/PB



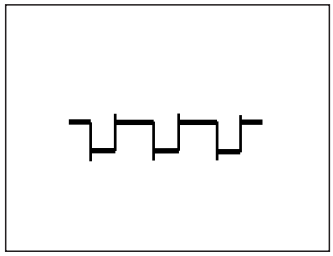
5.1 Vp-p (757.6 Hz)

❹ IC161 ① REC/PB



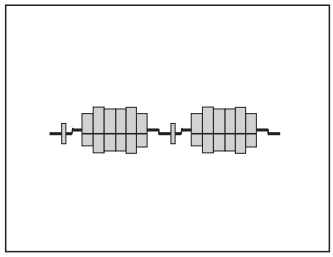
5.1 Vp-p (2 V)

❺ IC161 ⑦ REC



5.0 Vp-p (2 V)

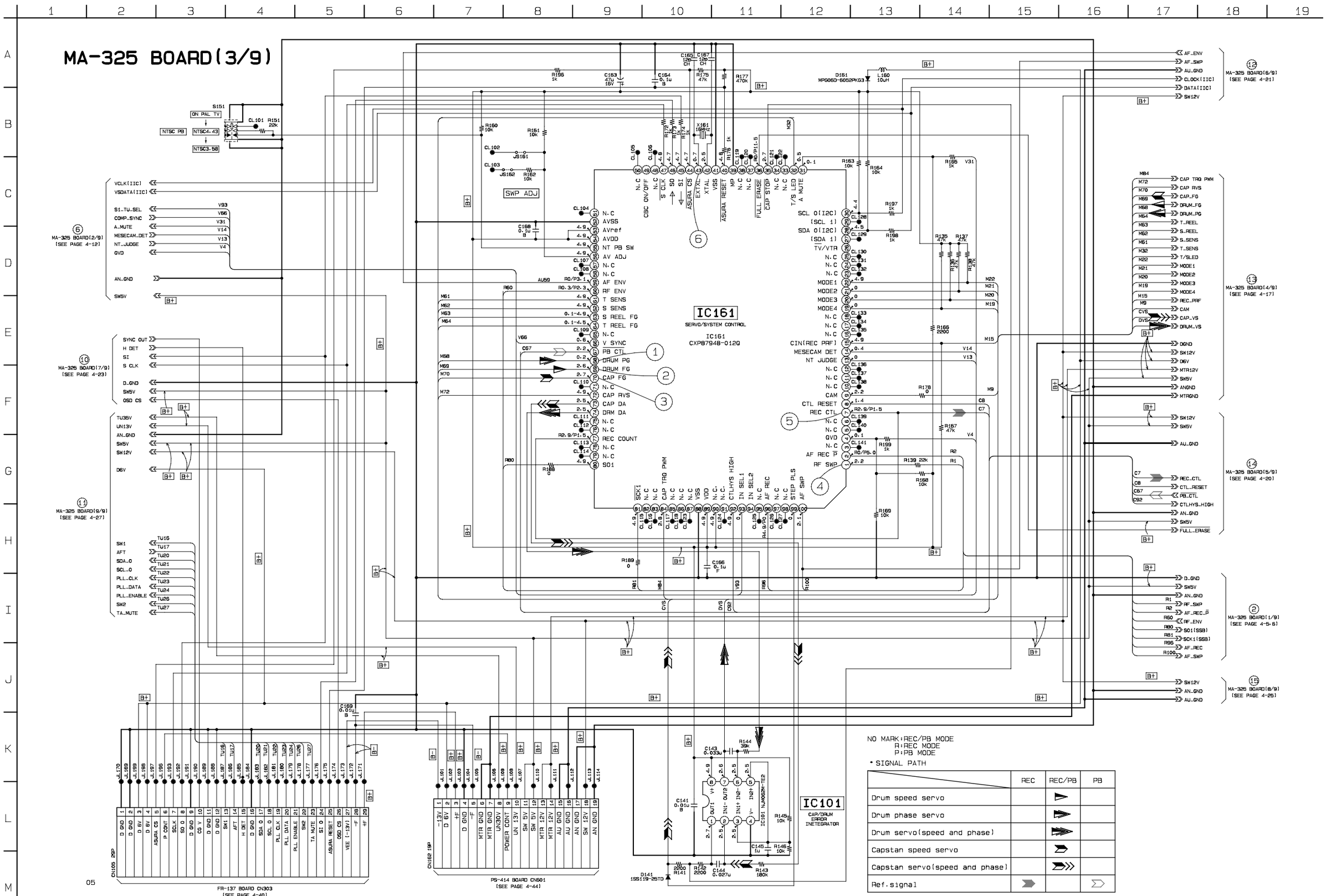
❻ IC161 ㊸ REC/PB



2.4 Vp-p (16 MHz)

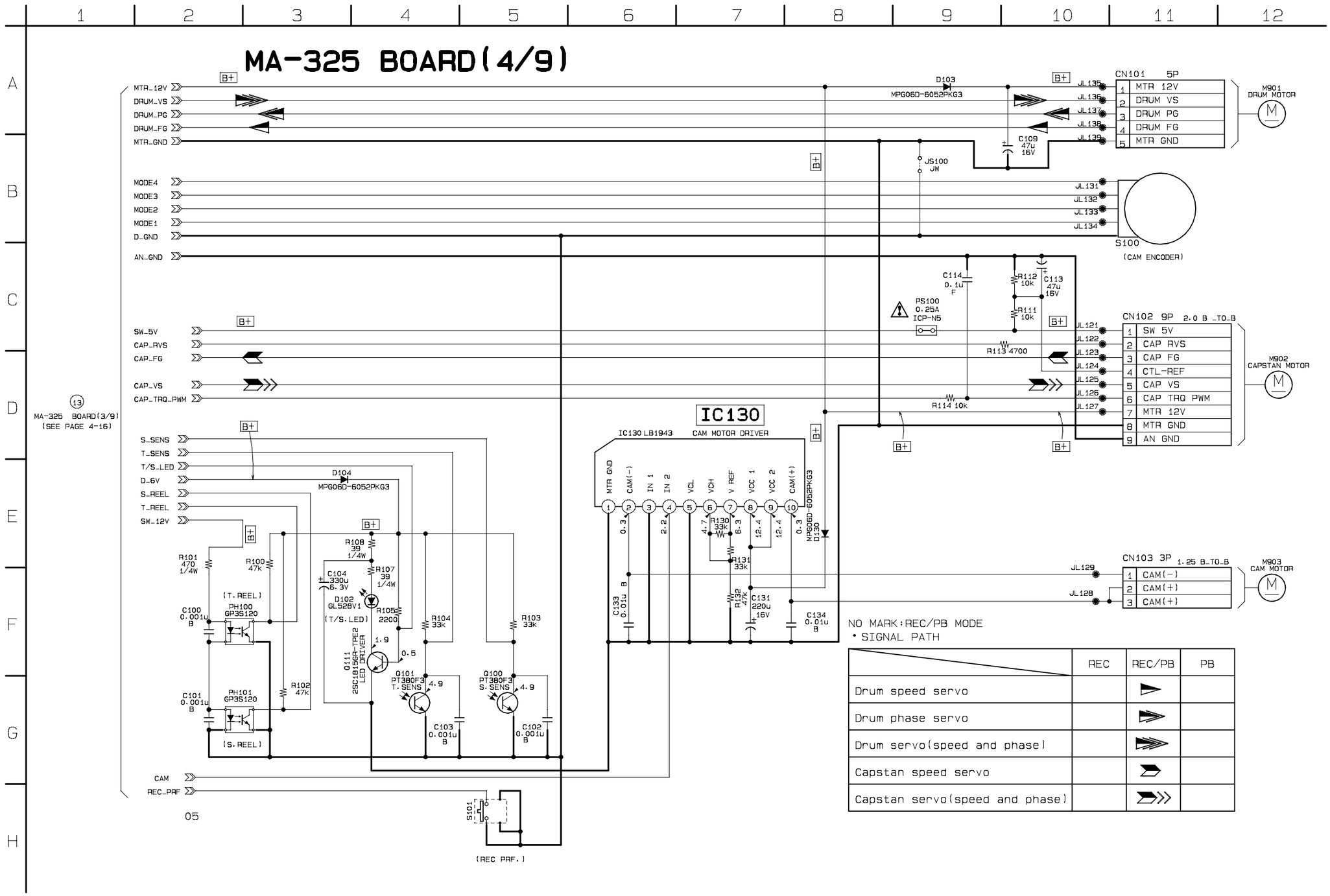
MA-325 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-325 board; 2,000 series –



MA-325 (SERVO CONTROL) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-325 board; 2,000 series –

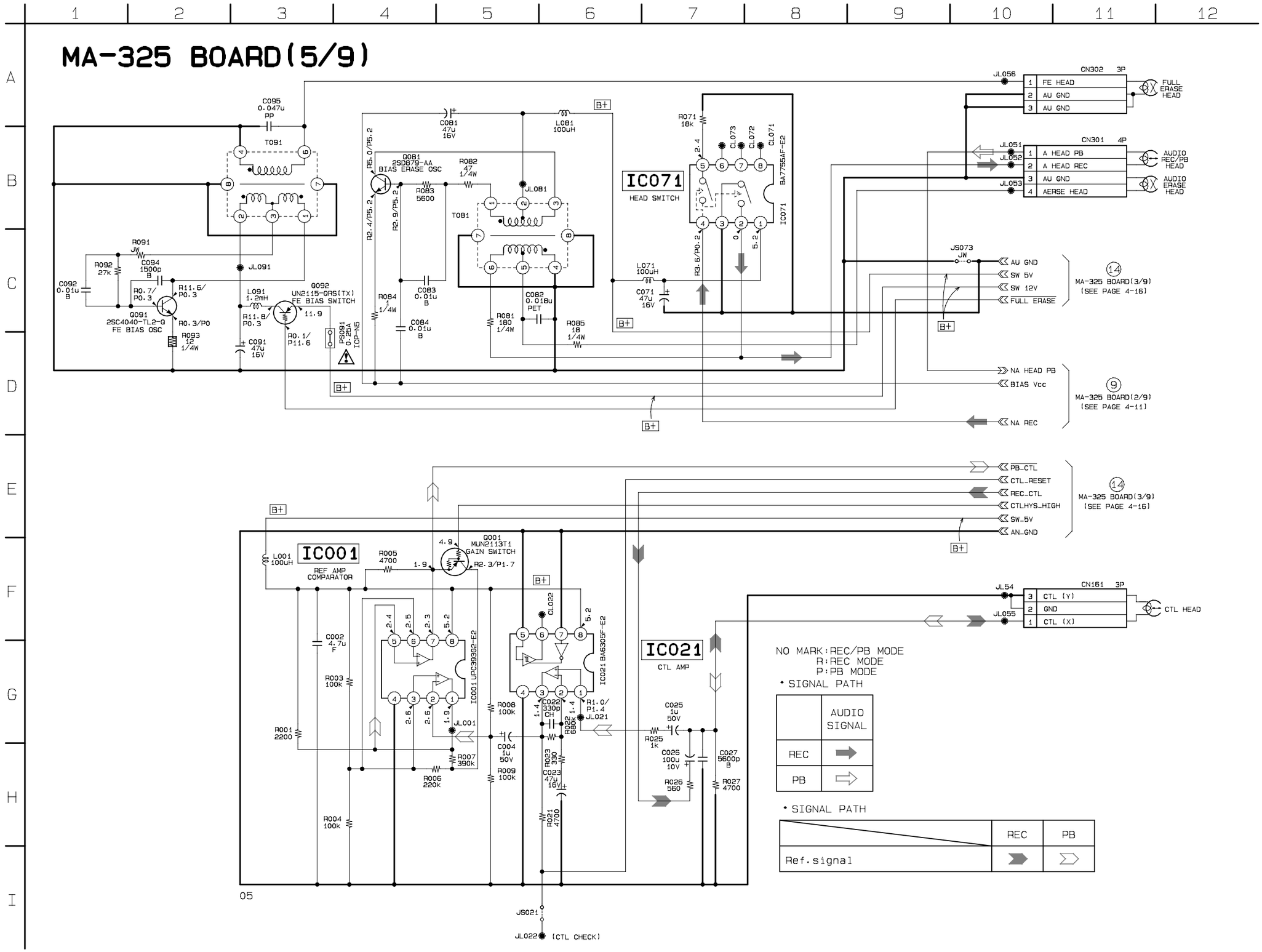


NO MARK:REC/PB MODE
• SIGNAL PATH

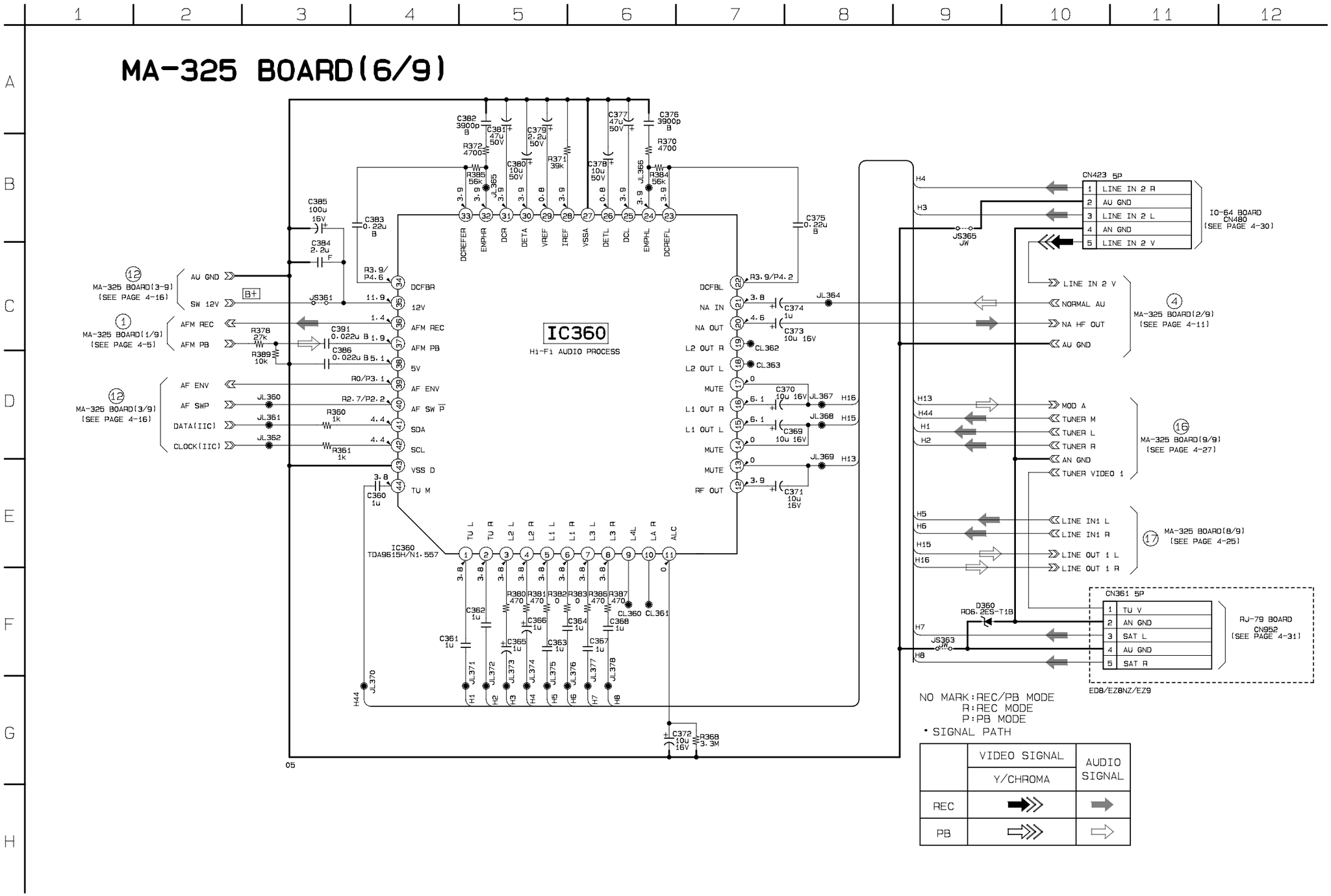
	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo(speed and phase)		▶▶▶	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶▶▶	

MA-325 (BIAS, CTL) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-325 board; 2,000 series –

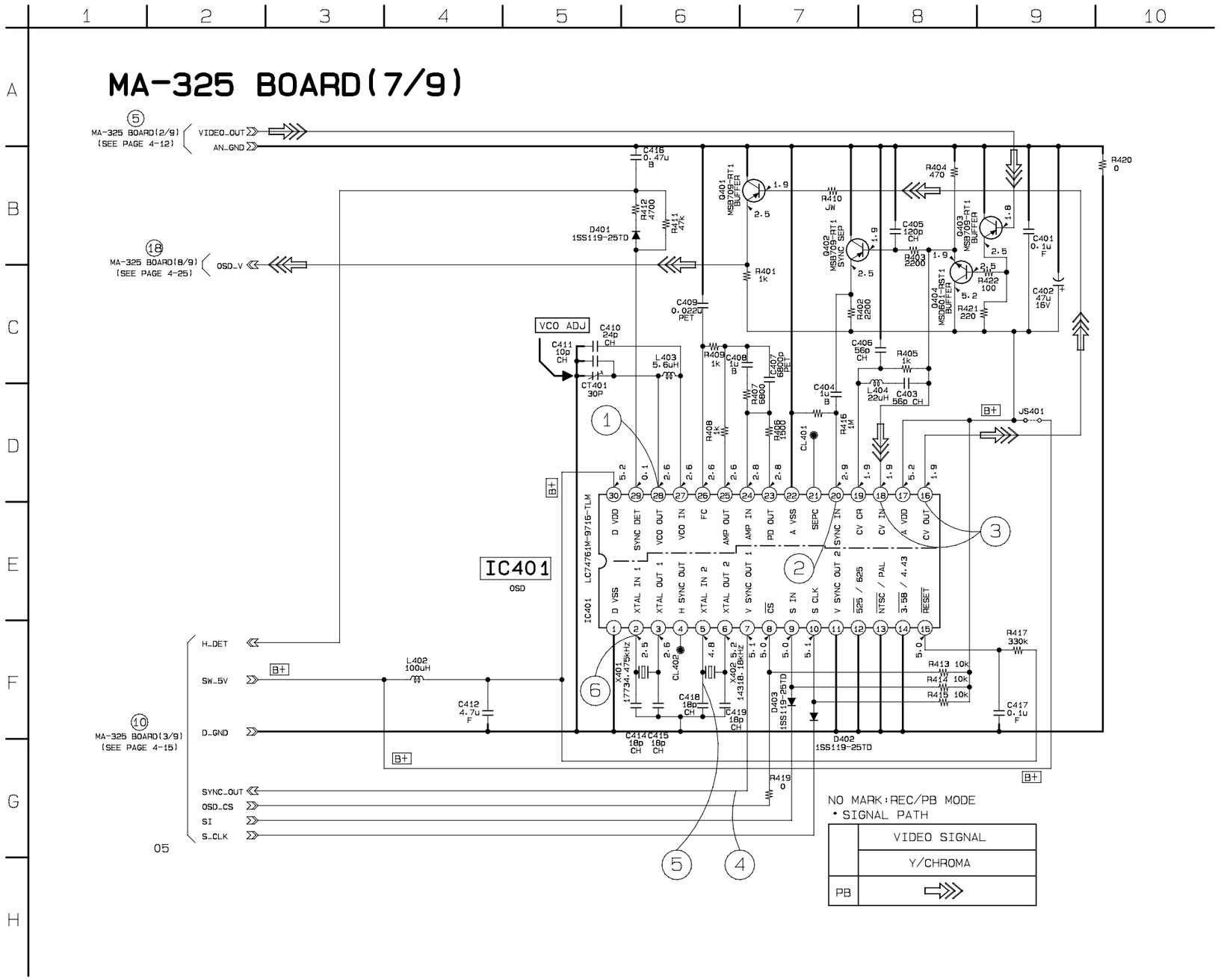


MA-325 (Hi-Fi, AUDIO) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.
– Ref. No.: MA-325 board; 2,000 series –



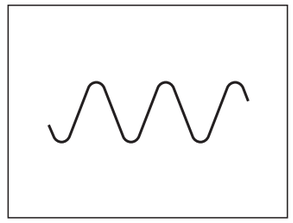
MA-325 (OSD) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-325 board; 2,000 series –



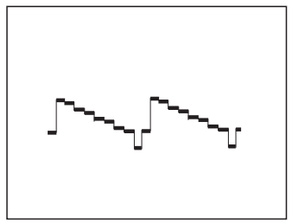
• Waveforms

❶ IC401 ㉘ REC/PB



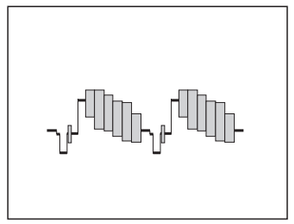
3.6 Vp-p (13.89 MHz)

❷ IC401 ⑳ REC/PB



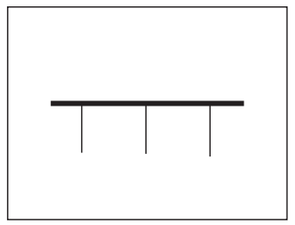
1.6 Vp-p (H)

❸ IC401 ⑯⑱ REC/PB



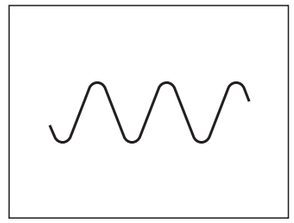
2.0 Vp-p (H)

❹ IC401 ⑦ REC/PB



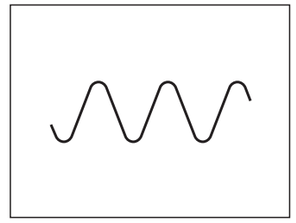
5.2 Vp-p (2 V)

❺ IC401 ⑤ REC/PB



1.5 Vp-p (14.32 MHz)

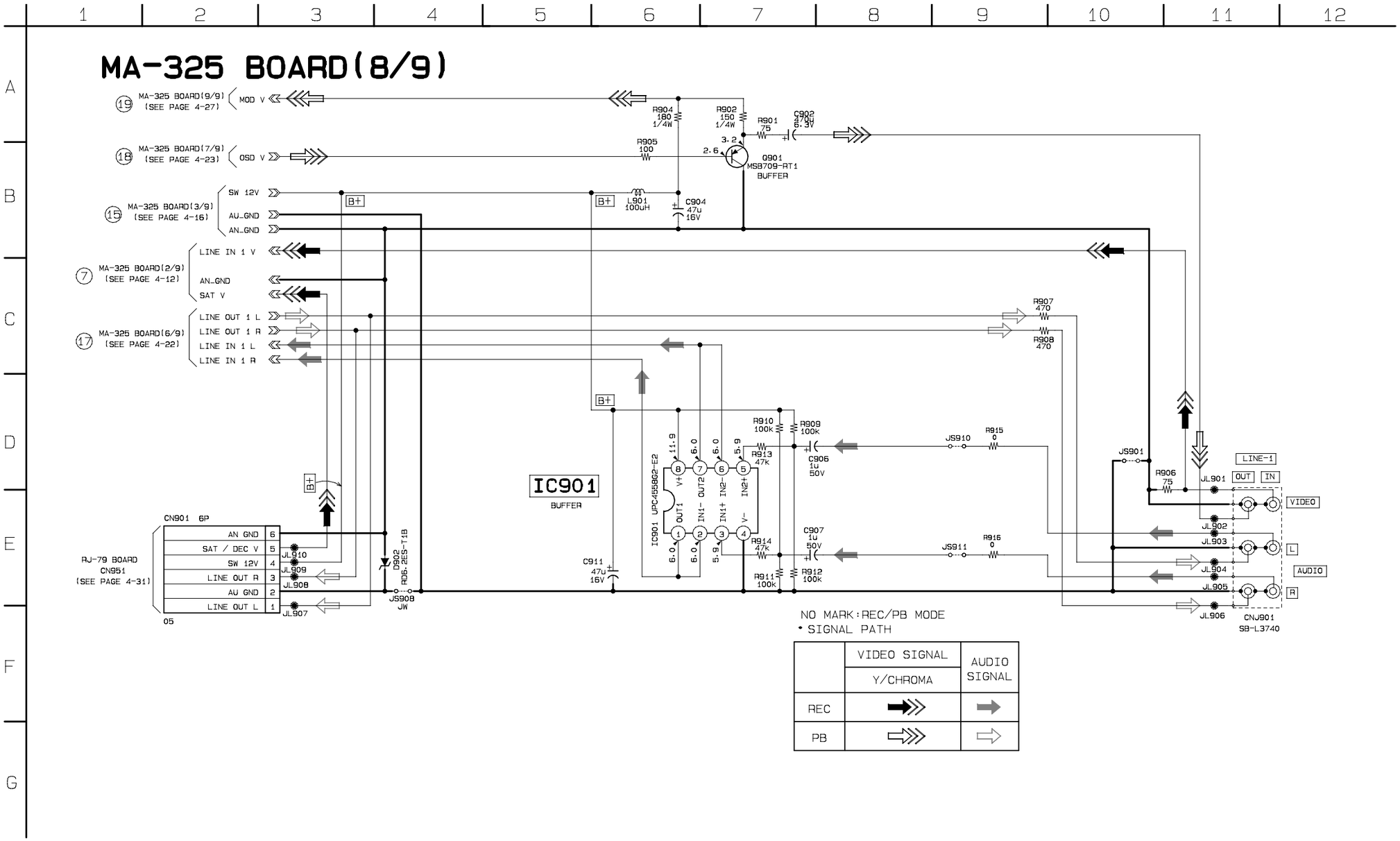
❻ IC401 ② REC/PB



1.6 Vp-p (17.73 MHz)

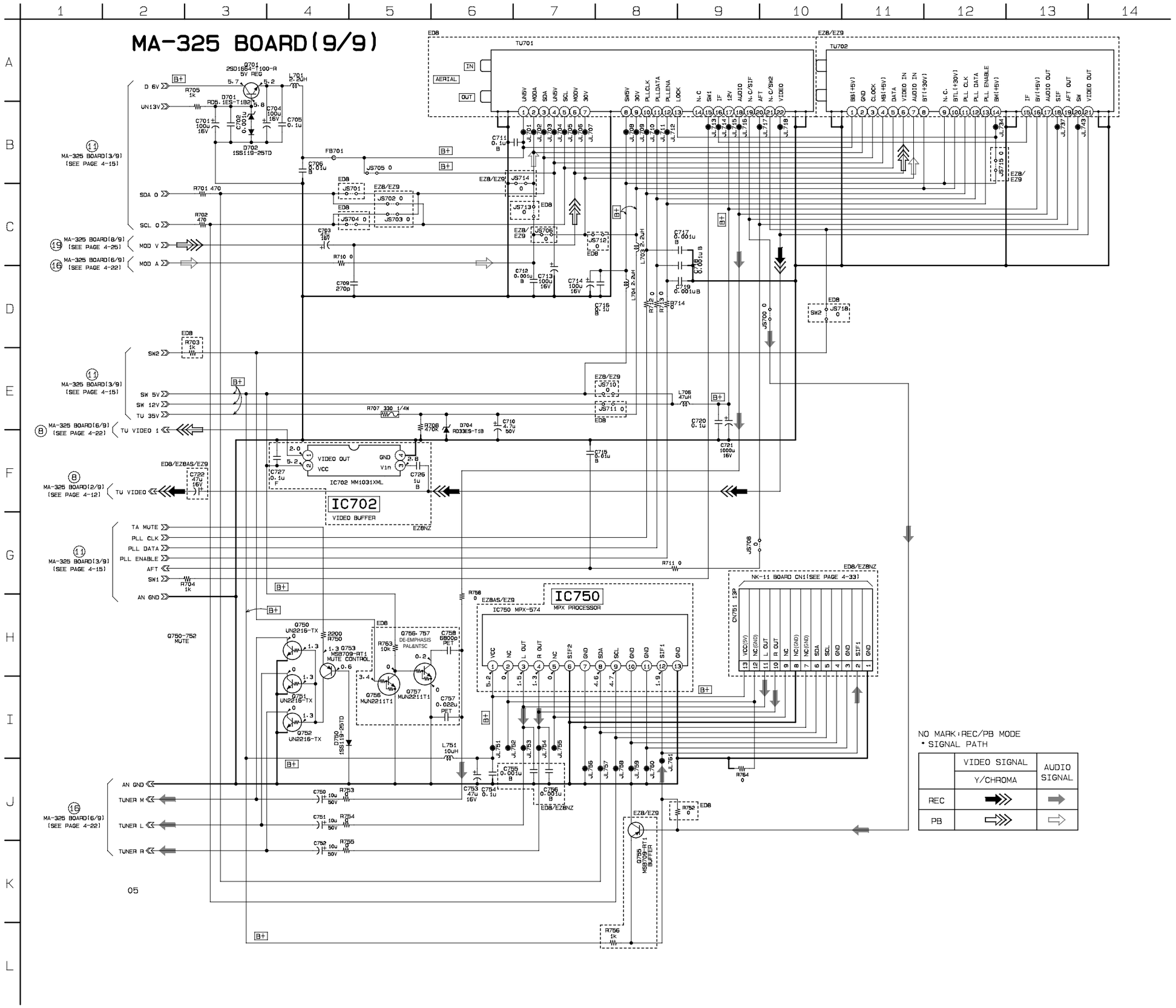
MA-325 (I/O) SCHEMATIC DIAGRAM • **See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-325 board; 2,000 series –



MA-325 (TUNER) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

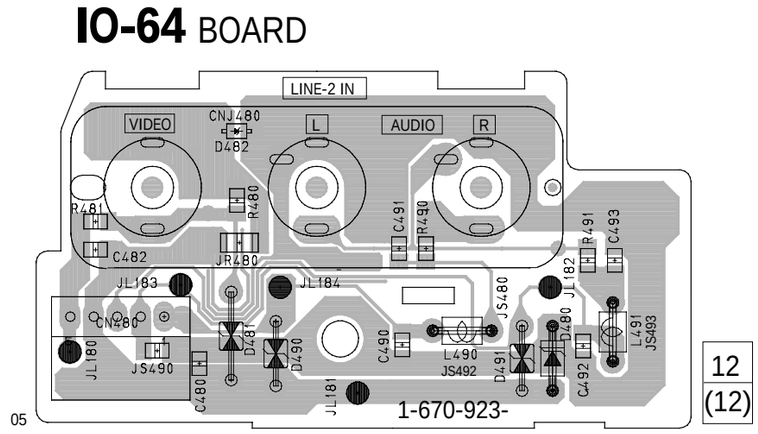
– Ref. No.: MA-325 board; 2,000 series –

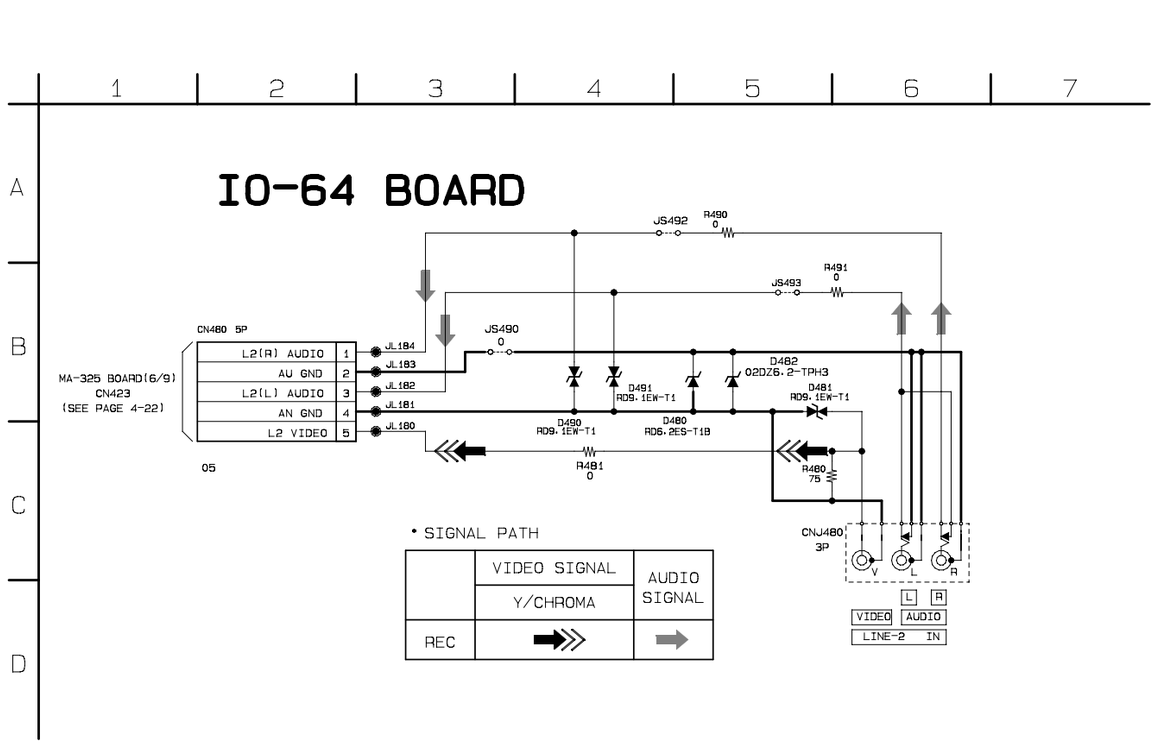


IO-64 (FRONT IN) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: IO-64 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



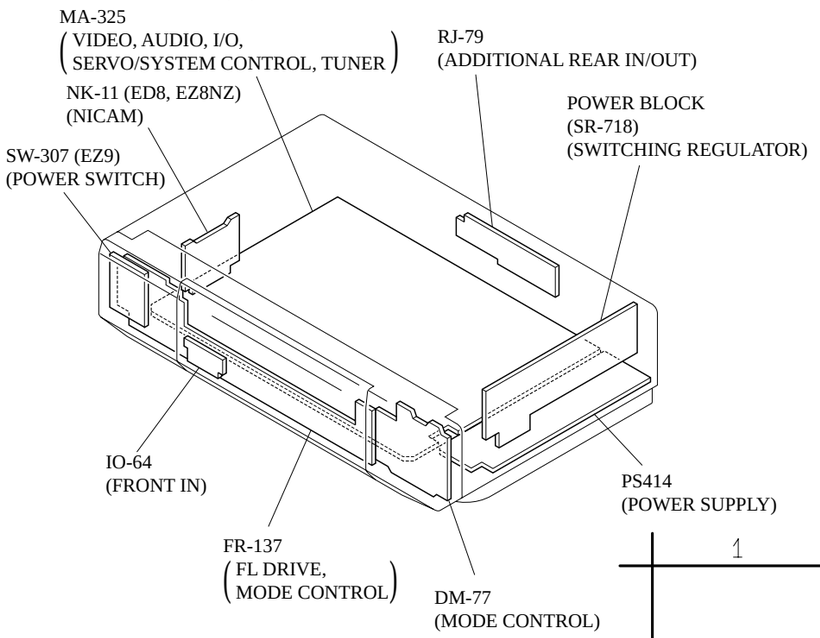


FRONT IN
IO-64

RJ-79 (ADDITIONAL REAR IN/OUT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

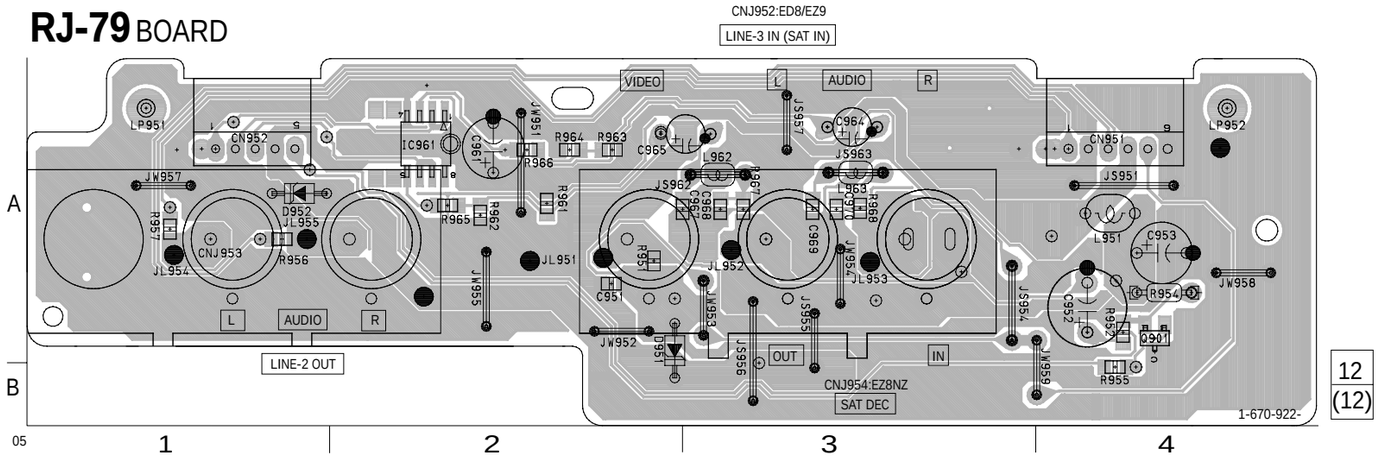
– Ref. No.: RJ-79 board; 1,000 series –

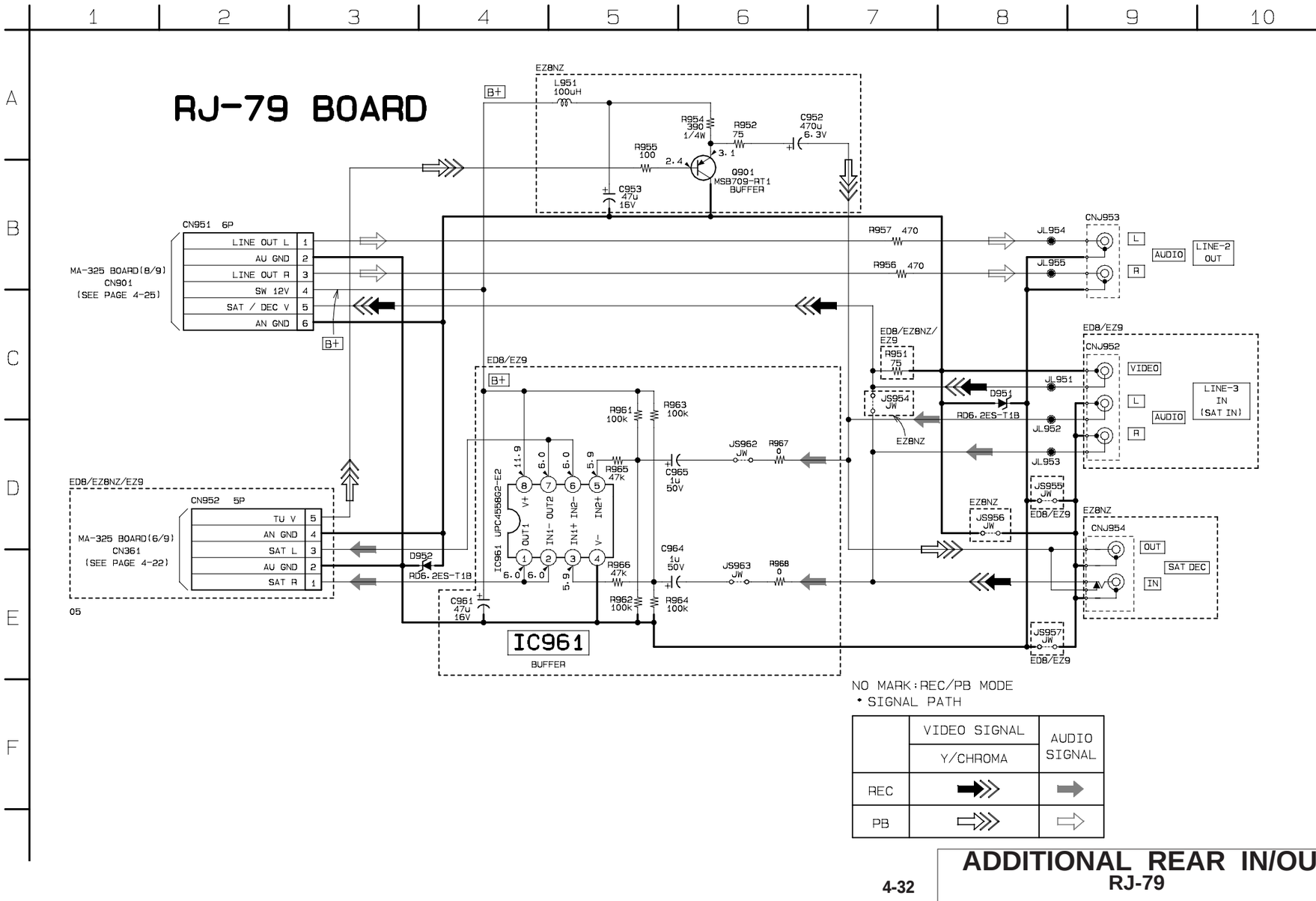
There are few cases that the part isn't mounted in this model is printed on this diagram.



RJ-79 BOARD

CN951	A-5
CN952	A-1
D951	B-3
D952	A-2
IC961	A-2





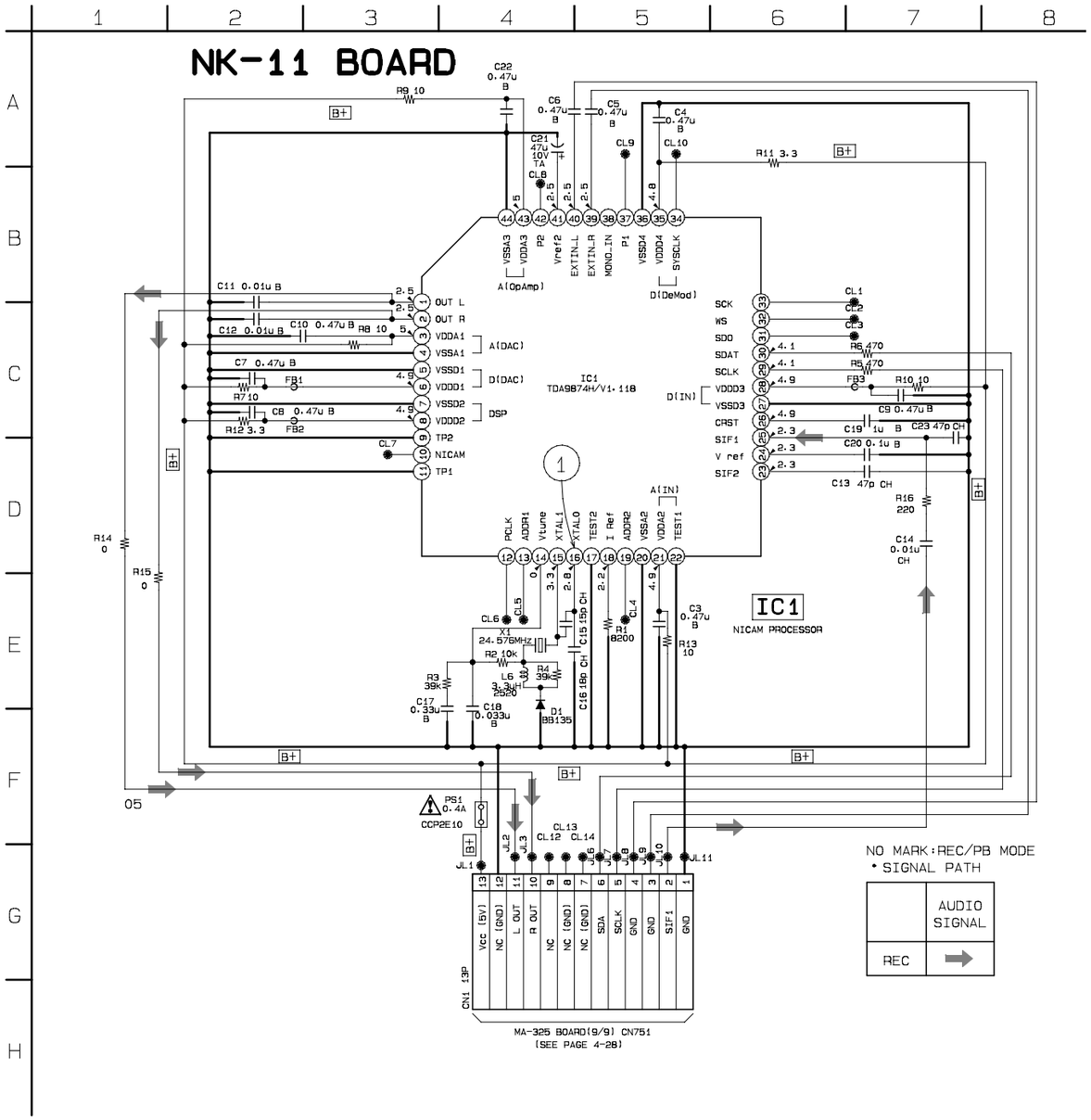
NO MARK:REC/PB MODE
• SIGNAL PATH

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	➡	➡
PB	⇨	⇨

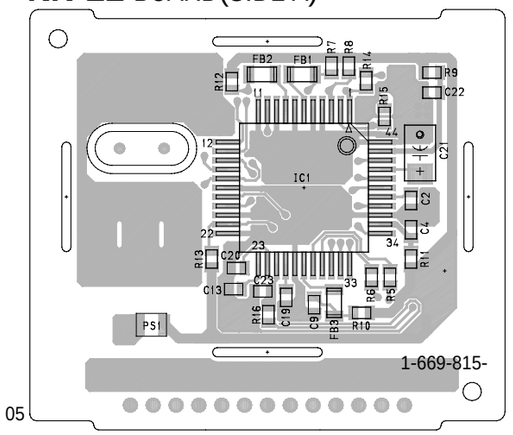
NK-11 (NICAM) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: NK-11 board; 1,000 series –

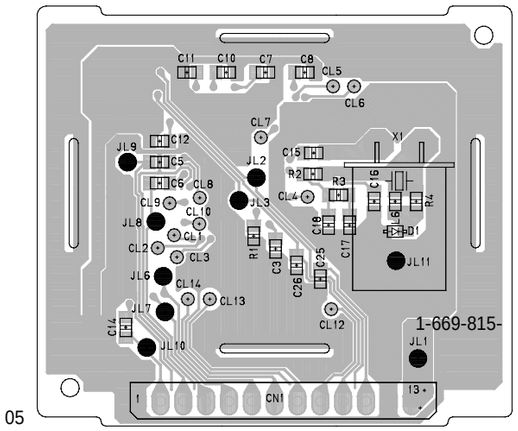
There are few cases that the part isn't mounted in this model is printed on this diagram.



NK-11 BOARD(SIDE A)

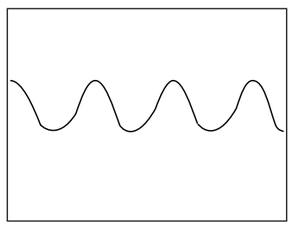


NK-11 BOARD(SIDE B)



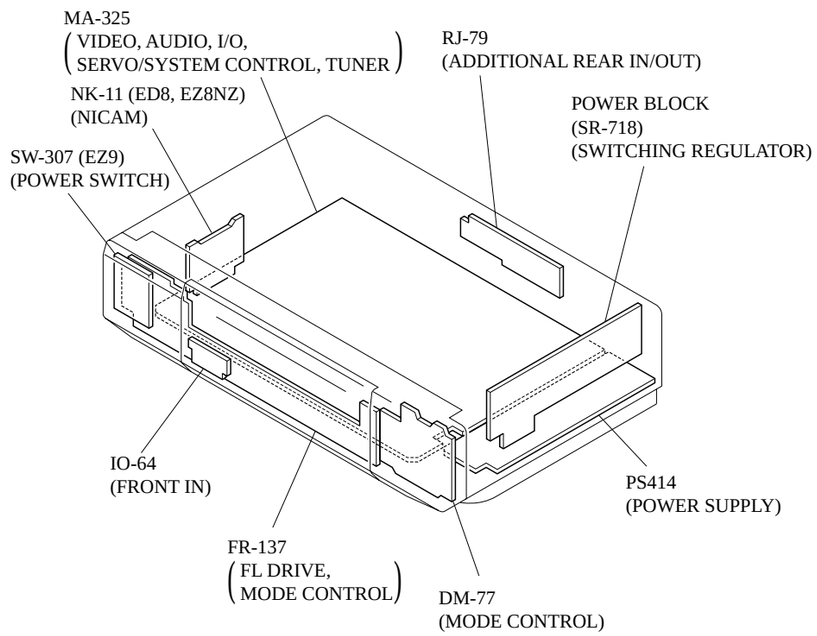
• Waveform

❶ IC1 ⑯ REC/PB



740 mVp-p (24.576 MHz)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

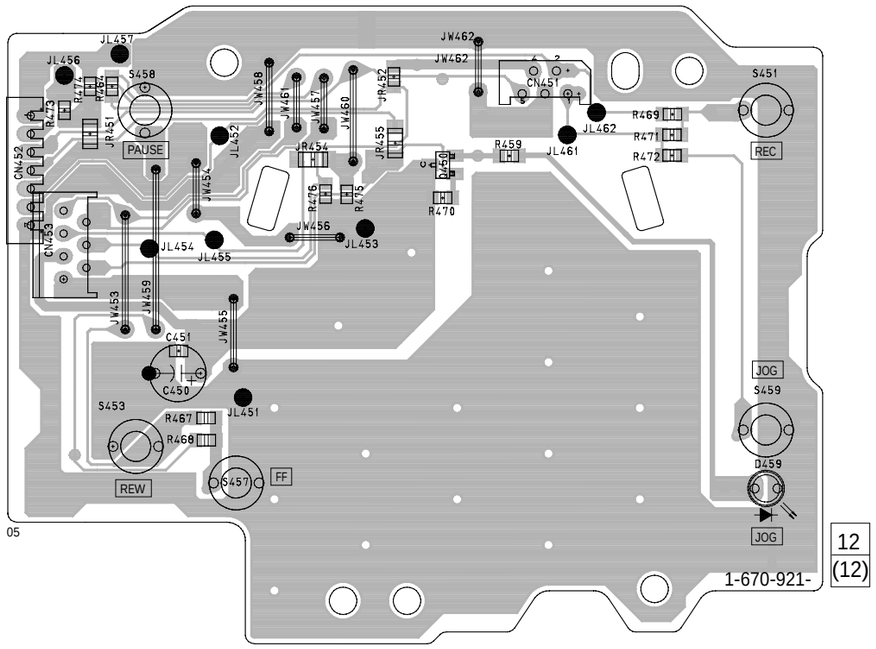


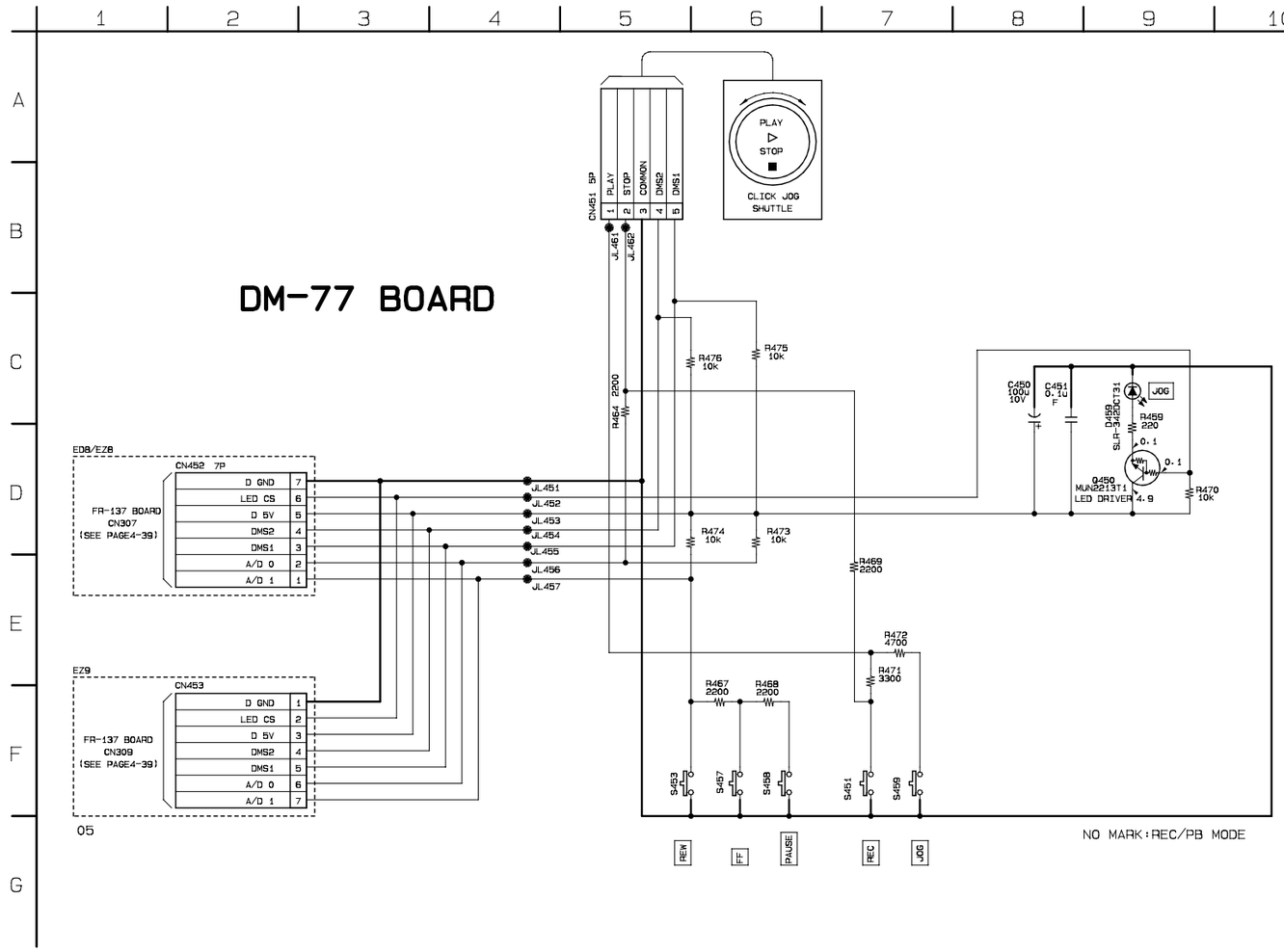
DM-77 (MODE CONTROL) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: DM-77 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

DM-77 BOARD



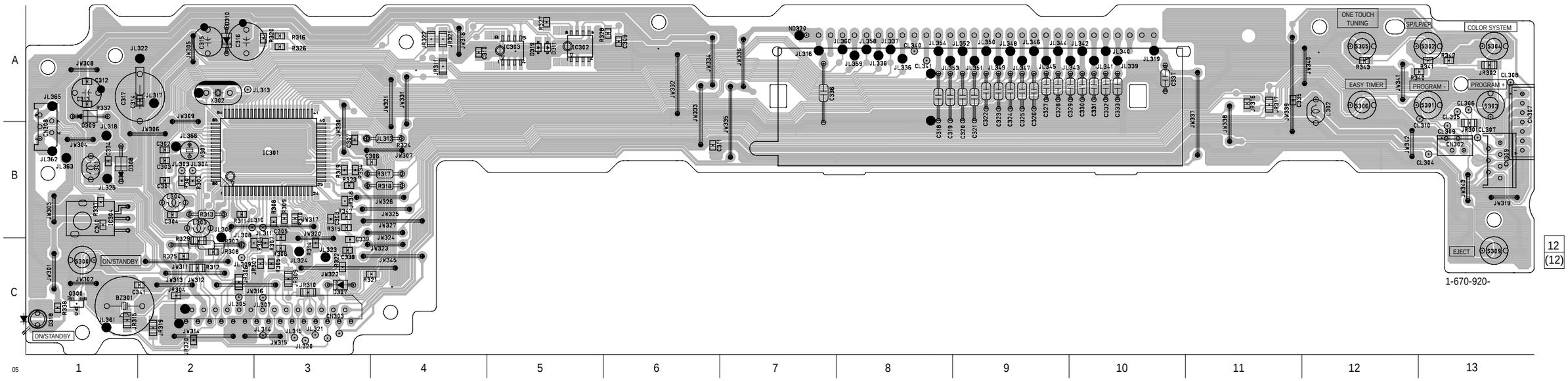


FR-137 (FL DRIVE, MODE CONTROL), SW-307 (POWER SWITCH) PRINTED WIRING BOARDS

– Ref. No.: FR-137 board, SW-307 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

FR-137 BOARD



FR-137 BOARD

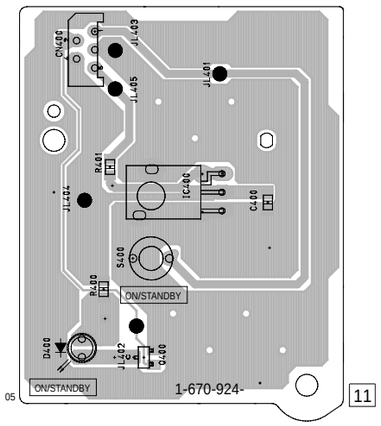
CN302 B-13
CN303 C-3
CN307 A-13
CN308 B-1
CN309 B-13

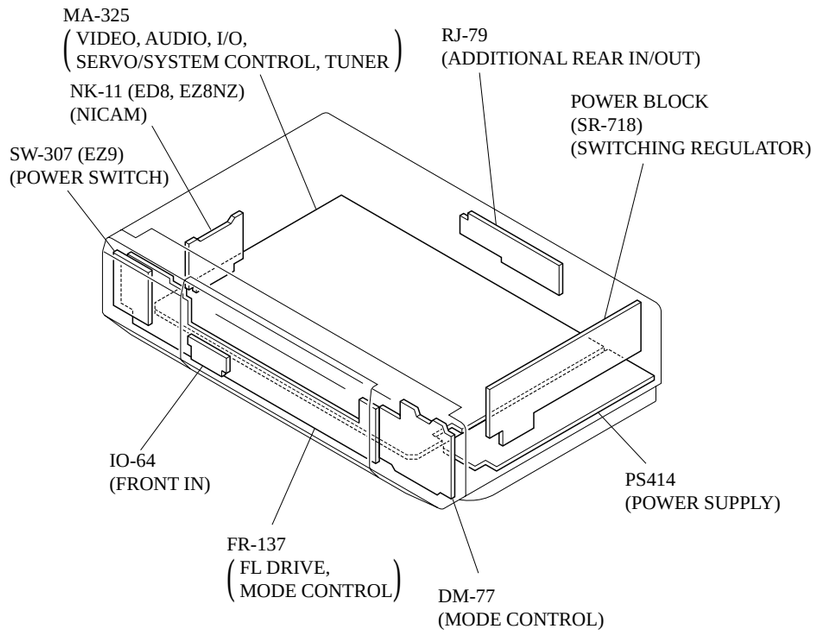
D307 C-3
D308 B-1
D309 A-1
D311 A-5
D318 C-1
D319 A-5

IC301 B-3
IC302 A-5
IC303 A-5
IC304 B-1

Q300 C-1

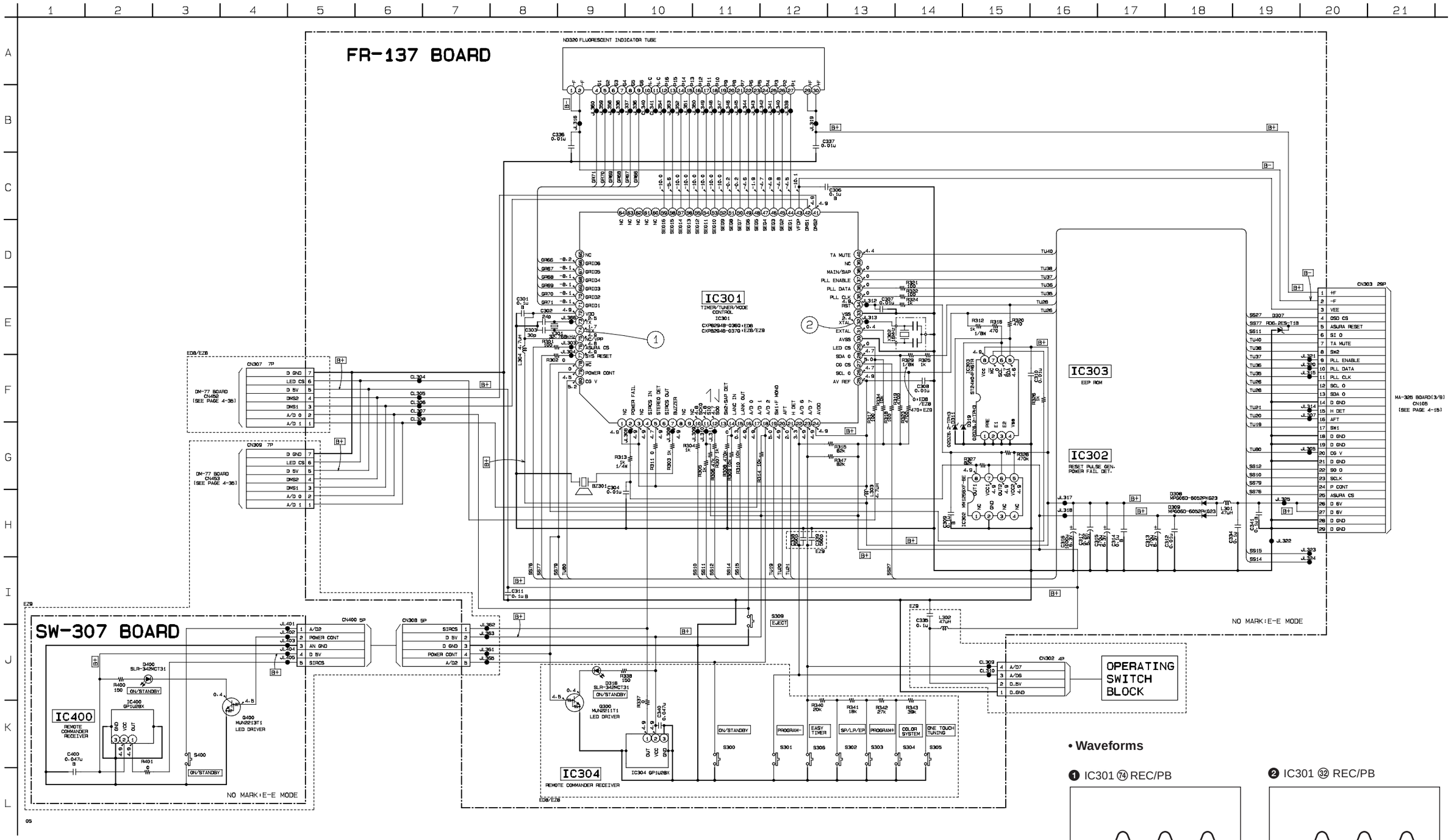
SW-307 BOARD





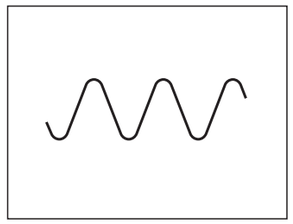
FR-137 (FL DRIVE, MODE CONTROL), SW-307 (POWER SWITCH) SCHEMATIC DIAGRAM

– Ref. No.: FR-137 board, SW-307 board; 1,000 series –



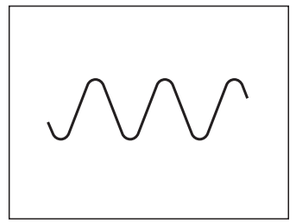
• **Waveforms**

❶ IC301 ⑭ REC/PB



2.3 Vp-p (32.77 kHz)

❷ IC301 ㉜ REC/PB



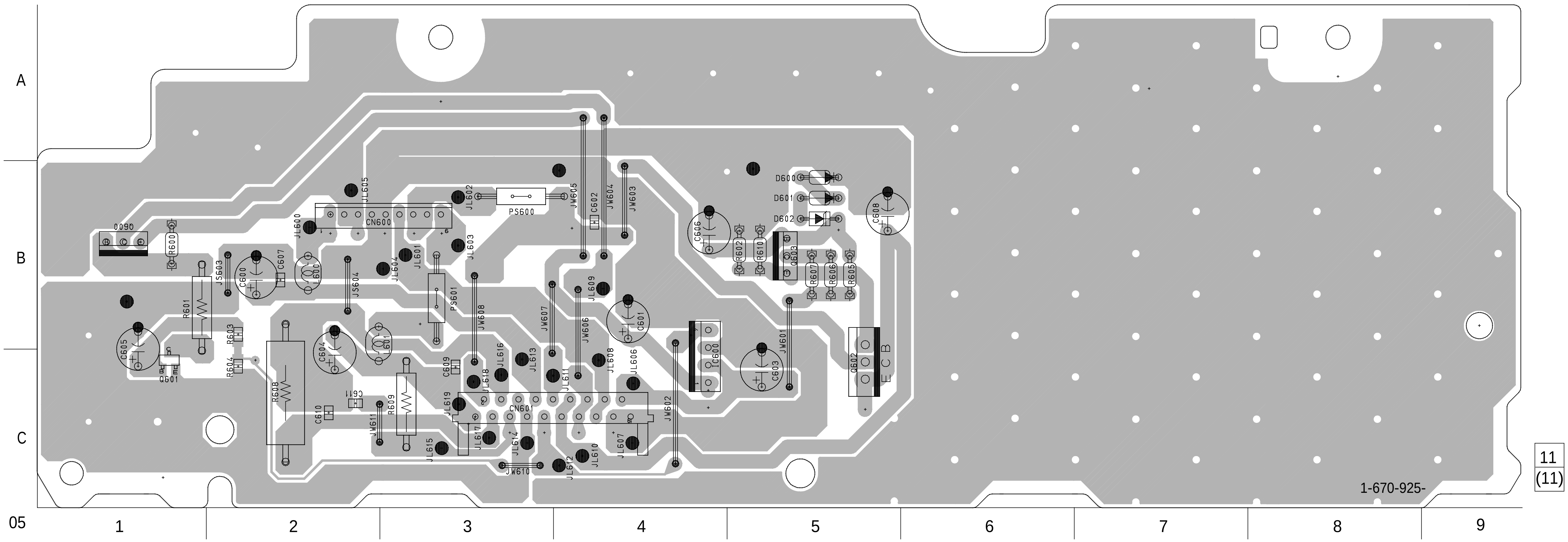
2.0 Vp-p (16 MHz)

PS-414 (POWER SUPPLY) PRINTED WIRING BOARD

– Ref. No.: PS-414 board; 1,000 series –

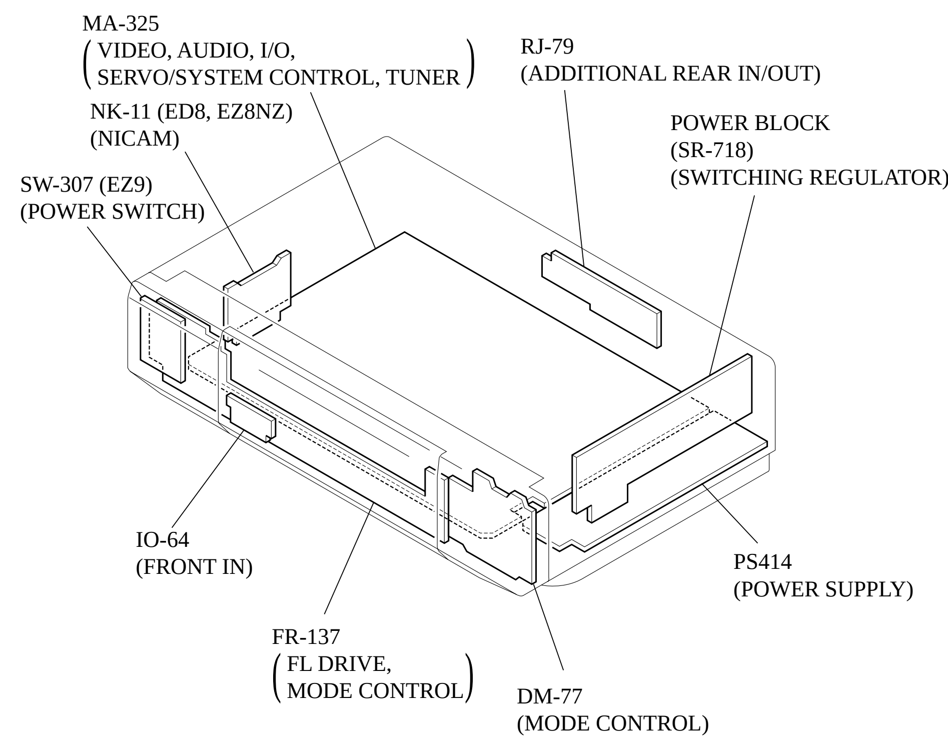
There are few cases that the part isn't mounted in this model is printed on this diagram.

PS-414 BOARD


A
B
C
05
1
2
3
4
5
6
7
8
9
CN600
CN601
D600
D601
D602
IC600
Q600
Q601
Q602
Q603
PS600
PS601
R600
R601
R602
R603
R604
R605
R606
R607
R608
R609
R610
C600
C601
C602
C603
C604
C605
C606
C607
C608
C609
C610
C611
L600
L601
JS603
JS604
JW601
JW602
JW603
JW604
JW605
JW606
JW607
JW608
JW610
JW611
1-670-925-
11
(11)

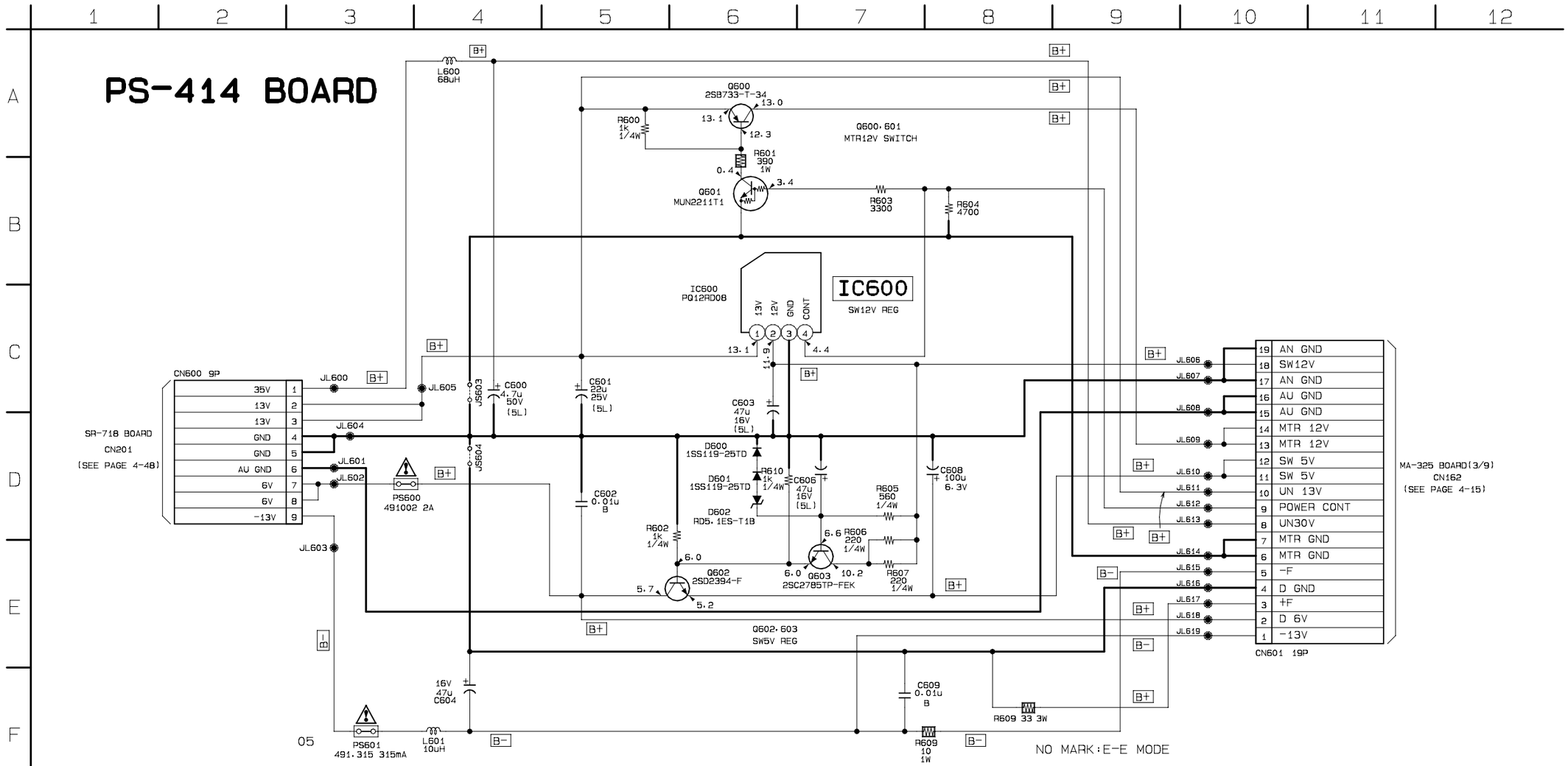
PS-414 BOARD

CN600	B-3
CN601	C-3
D600	A-5
D601	B-5
D602	B-5
IC600	C-4
Q600	B-1
Q601	C-1
Q602	C-5
Q603	B-5



PS-414 (POWER SUPPLY) SCHEMATIC DIAGRAM

– Ref. No.: PS-414 board; 1,000 series –

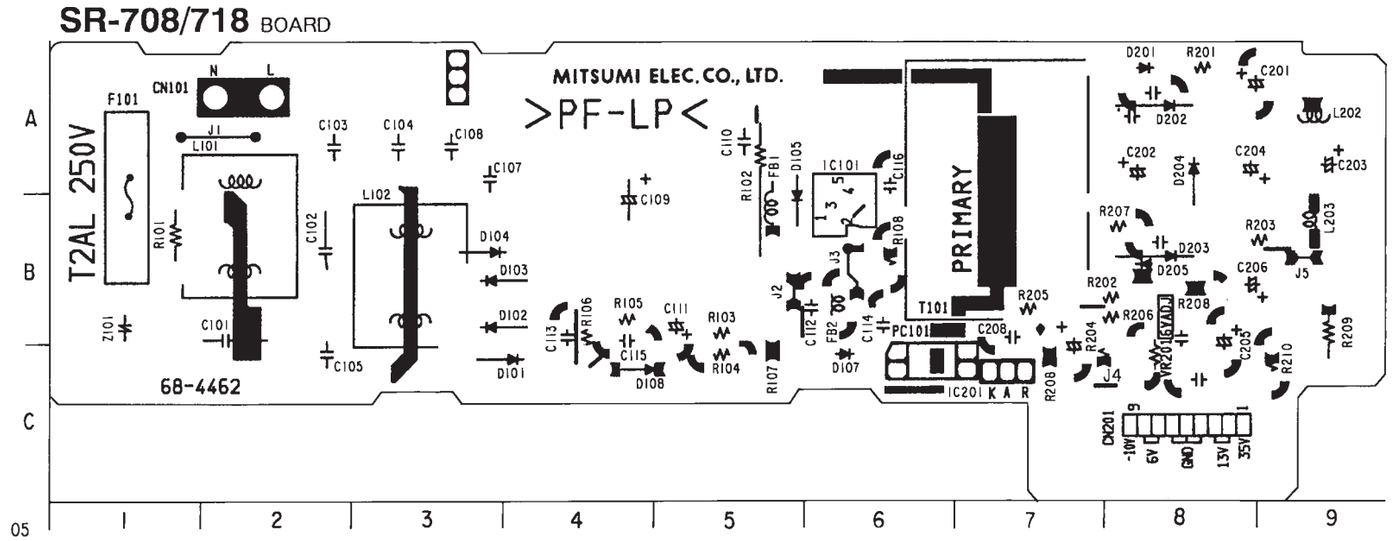


Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SR-718 (SWITCHING REGULATOR) PRINTED WIRING BOARD

– Ref. No.: SR-718 board; 4,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

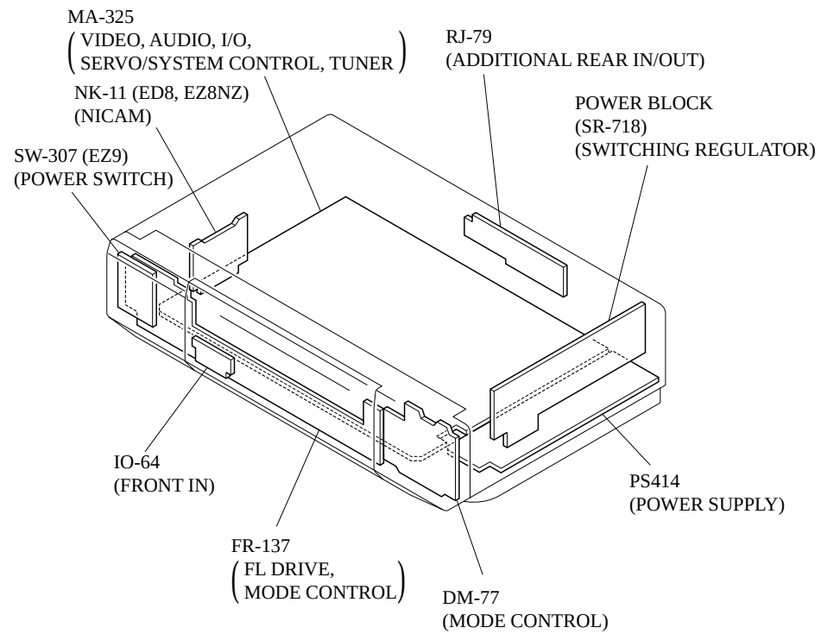


SR-718 BOARD

CN101 A-2
CN201 C-8

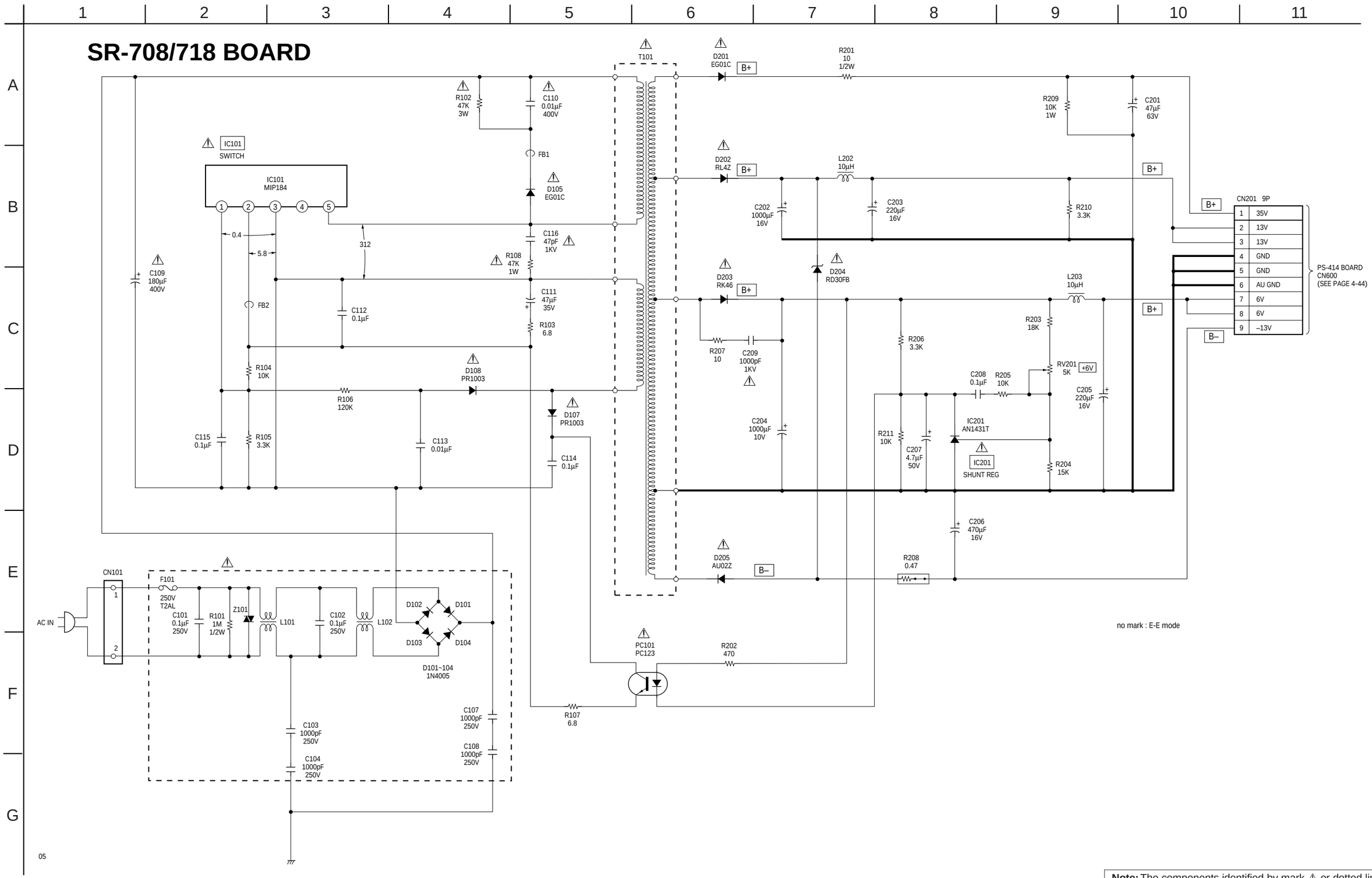
D101 C-3
D102 B-3
D103 B-3
D104 B-3
D105 B-5
D107 C-6
D108 C-4
D201 A-8
D202 A-8
D203 B-8
D204 A-8
D205 B-8

IC101 B-6
IC201 C-7



SR-718 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: SR-718 board; 4,000 series –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SWITCHING REGULATOR
SR-718

5-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-325 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
RF SWP (SW30)	MA-325 IC161①	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
QVD	MA-325 IC161④	O	L	L	L	*2	*3	*3	*3	*3	*3	L	L
V SYNC	MA-325 IC161⑯	I	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
NT JUDGE	MA-325 IC161⑬	$\overline{O}$	L	L	L	L	L	L	L	L	L	L	L

∗1. 25 Hz pulse with 50% duty cycle. Synchronized with rotation of drum.
∗2. Normally “L”. “H” when CTL sibnal is not generated.
∗3. V period “H” pulse.
∗4. Composite sync signal (positive polarity).

5-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-325 BOARD IC161)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
REC CTL	MA-325 IC161⑦	O	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	*2	Hi-Z	Hi-Z	Hi-Z	*1	Hi-Z
$\overline{\text{CAP STOP}}$	MA-325 IC161㉟	$\overline{O}$ ($\overline{O}$.D)	L	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)	Hi-Z (O.D)	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)	L	*3	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)	Hi-Z ($\overline{O}$.D)
STEP PLS	MA-325 IC161㊴	$\overline{O}$	L	L	L	L	L	L	L	*2	L	L	L	L	L
$\overline{\text{PB CTL}}$	MA-325 IC161㊼	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H
DRM PG	MA-325 IC161㊽	I	*4	*1	*1	*5	*5	*1	*1	*1	*1	*1	*1	*1	*1
DRM FG	MA-325 IC161㊾	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7
CAP FG	MA-325 IC161㊿	I	H/L	*6	*6	*5	*5	*6	H/L	*2	*6	*6	*6	*6	H/L
CAP DA	MA-325 IC161(73)	$\overline{O}$	*8	*8	*8	*8	*8	*9	*8	*8	*9	*9	*9	*9	*8
DRM DA	MA-325 IC161(74)	$\overline{O}$	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10
CTL RESET	MA-325 IC161⑧	I/$\overline{O}$	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	*11	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z

∗1. 25 Hz (PAL), 30 Hz (NTSC) pulse.
∗2. Pulse at tape running.
∗3. Reverse logic pulse of STEP PLS.
∗4. “L” when drum rotation stop.
∗5. Unstable period pulse.
∗6. Pulse of period in proportion to tape speed.
∗7. 300 Hz (PAL), 360 Hz (NTSC) pulse.
∗8. Pulse at tape running.
∗9. Approx. 2 msec period “H” or “L” pulse.
∗10. Approx. 1.5 msec period “H” or “L” pulse.
∗11. “L” when FWD slow, “H” when RVS slow.

5-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE (MA-325 BOARD IC161)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAM	MA-325 IC161⑨	O	Hi-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MODE 1	MA-325 IC161㉒	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-325 IC161㉑	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	MA-325 IC161⑳	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	MA-325 IC161⑲	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
C IN REC PRF	MA-325 IC161⑮	I	H	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL FG	MA-325 IC161㊹	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL FG	MA-325 IC161㊸	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/S LED	MA-325 IC161㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
$\overline{\text{CAP STOP}}$	MA-325 IC161㉟	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
$\overline{\text{CAP RVS}}$	MA-325 IC161㉞	$\overline{\text{O}}$	L			H	L	H/L	H	L	H	H	H/*5	H	H	L	H	H
T SENS	MA-325 IC161㊶	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	MA-325 IC161㊷	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

∗1. Uncertainly.
∗2. “L” when erasing protection tab is bent, “H” when not bent.
∗3. Pulse of period in proportion to reel rotating speed.
∗4. Approx. 2 msec period “H” pulse.
∗5. Pulse at tape running.
∗6. Normally “L”. 2 msec period “H” pulse when tape top or tape end is detected.
∗7. When transition to UNLOADING direction: L.
When transition to LOADING direction: H.
When CAM motor is stopped: Hi-Z.
∗8. When RVS slow: mode 1; L.
When RVS slow: mode 2; L.
When RVS slow: mode 3; H.
When RVS slow: mode 4; L.

5-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-325 BOARD IC161)

Signal	Pin No.	I/O	I/O Level
$\overline{\text{ASURA RESET}}$	MA-325 IC161㊵	I	Normally “H”, “L” when service interruption is detected or restored
$\overline{\text{ASURA CS}}$	MA-325 IC161㊹	I	Chip select signal from timer microprocessor. V period “L” pulse
S IN	MA-325 IC161㊺	I	Serial communication data from timer microprocessor. V period “L” pulse
S OUT	MA-325 IC161㊻	O	Serial communication data to timer microprocessor. V period “L” pulse
$\overline{\text{S CLK}}$	MA-325 IC161㊼	I	Serial communication clock from timer microprocessor. V period “L” pulse

5-5. SYSTEM CONTROL – Hi-Fi AUDIO BLOCK INTERFACE (MA-325 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	PB • PAUSE
AU ENV	MA-325 IC161㊾	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-325 IC161㉛	O (O.D)	L	L	L	L	H	H	H	H	H	L	L
AF REC $\bar{P}$	MA-325 IC161②	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-325 IC161 ⑩⓪	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERS}}$	MA-325 IC161㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 25 Hz (PAL), 30 Hz (NTSC) 50% duty pulse approx. 5 msec delayed from RF SW P.

5-6. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-325 BOARD IC161)

Pin No.	Pin Name	I/O	Function
1	RF SWP	O	RF switching pulse output
2	AF REC P	O	“L” output when hi-fi audio REC pause
3	N.C	–	Not used
4	QVD	O	Quasi VD pulse output
5	N.C	–	Not used
6	N.C	–	Not used
7	REC CTL	O	REC CTL signal output
8	CTL RESET	I	CTL reset (for check)
9	CAM	O	CAM motor control
10	N.C	–	Not used
11	N.C	–	Not used
12	N.C	–	Not used
13	NT JUDGE	I	NTSC judgement in (3.58/4.43)
14	MESECAM DET	I	MESECAM mode detect signal input
15	CIN (REC PRF)	I	Erasing protection tab. Cassette in detection.
16	N.C	–	Not used
17	N.C	–	Not used
18	N.C	–	Not used
19	MODE 4	I	Mechanism section CAM encoder input (data4)
20	MODE 3	I	Mechanism section CAM encoder input (data3)
21	MODE 2	I	Mechanism section CAM encoder input (data2)
22	MODE 1	I	Mechanism section CAM encoder input (data1)
23	N.C	–	Not used
24	N.C	–	Not used
25	N.C	–	Not used
26	$\overline{TV}$/VTR	O	Not used (For NTSC model only. RF-output control)
27	N.C	–	Not used
28	SDA 0	I/O	Video Audio (Normal & Hifi) block communication signal (IIC DATA)
29	N.C	–	Not used
30	SCL 0	O	Video Audio (Normal & Hifi) block communication signal (IIC CLOCK)
31	A MUTE	O	“A” Audio mute signal output
32	T/S LED	O	Top/End LED ON/OFF control
33	N.C	–	Not used
34	N.C	–	Not used
35	$\overline{CAP\ STOP}$	O	Capstain motor stop control
36	$\overline{FULL\ ERASE}$	O	Full erase head control
37	N.C	–	Not used
38	N.C	–	Not used
39	MP	I	Fixed to L
40	$\overline{ASURA\ RESET}$	I	System reset input
41	V ss	–	Ground
42	XTAL	–	System clock 16MHz
43	EXTAL	–	System clock 16MHz
44	$\overline{ASURA\ CS}$	I	S/S microcomputer chip signal
45	S IN	I	Serial communication signal (Data input)
46	S OUT	O	Serial communication signal (Data output)
47	$\overline{S\ CLK}$	O	Serial communication signal (Serial clock)
48	N.C	–	Not used
49	N.C	–	Not used
50	N.C	–	Not used

Pin No.	Pin Name	I/O	Function
51	N.C	–	Not used
52	AVSS	–	UNSW Ground
53	AVREF	–	A/D port reference input UNSW 5V
54	AVDD	–	UNSW 5V
55	NT PB SW	I	When NTSC PB mode, the color system setting signal input
56	AV ADJ	I	HiFi/RF switching adjustment mode
57	N.C	–	Not used
58	N.C	–	Not used
59	AF ENV	I	HiFi audio playback signal envelope
60	RF ENV	I	Video playback signal envelope
61	T SENS	I	Take up end sensor input
62	S SENS	I	Supply end sensor input
63	SREEL FG	I	S side reel FG input
64	TREEL FG	I	T side reei FG input
65	N.C	–	Not used
66	V SYNC	I	Composite sync input
67	$\overline{PB\ CTL}$	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	N.C	–	Not used
72	CAP RVS	O	Capstan reverse control H when Reverse
73	CAP DA	O	Capstan error D/A output
74	DRM DA	O	Drum error D/A output
75	N.C	–	Not used
76	N.C	–	Not used
77	REC CONT	I	Record count input
78	N.C	–	Not used
79	N.C	–	Not used
80	SO1	O	Signal for serial communication (data output)
81	SCK1	O	Signal for serial communication (clock)
82	N.C	–	Not used
83	N.C	–	Not used
84	CAP TRQ PWM	O	Capstan TRQ PWM output
85	N.C	–	Not used
86	N.C	–	Not used
87	N.C	–	Not used
88	VSS	–	Ground
89	VDD	–	5V
90	N.C	–	Not used
91	N.C	–	Not used
92	$\overline{CTLHYS\ HIGHT}$	O	CTL amp. Step control (Hi)
93	IN SEL1	O	LINE-INPUT selection control signal-1
94	N.C	–	Not used
95	N.C	–	Not used
96	AF REC	O	“H” output when Hifi audio REC
97	N.C	–	Not used
98	N.C	–	Not used
99	STEP PLS	O	Step pulse “H” when Capstan step driving
100	AF SWP	O	AF switching pulse output

5-7. TIMER/TUNER CONTROL MICROPROCESSOR PIN FUNCTION (FR-137 BOARD IC301)

Pin No.	Pin Name	I/O	Function
1	N.C	–	Not used (UNSW 5V)
2	$\overline{\text{POWER FAIL}}$	I	Power failure detect signal input
3	N.C	–	Not used (UNSW 5V)
4	SIRCS IN	I	Remote control signal (SIRCS) input
5	STEREO DET	I	Not used (Pull up 5V)
6	N.C	–	Not used
7	BUZZER	O	Buzzer signal output
8	N.C	–	Not used
9	N.C	–	Not used
10	$\overline{\text{SCK 0}}$	I	Serial communication signal (Serial clock)
11	SI 0	I	Serial communication signal (Data input)
12	SO 0	O	Serial communication signal (Data output)
13	SW2	–	Not used
14	LANC IN	I	LANC signal input
15	LANC OUT	O	LANC signal output
16	A/D 0	I	Analog voltage (KEY) input
17	A/D 1	I	Analog voltage (KEY) input
18	A/D 2	I	Analog voltage (KEY) input
19	SW1	O	For PAL and Multi model is TUNER System control
20	AFT	I	AFT (Auto fine tuning signal input)
21	H DET	I	H DET (TUNER H SYNC detect input)
22	A/D 6	I	Analog voltage (KEY) input
23	A/D 7	I	Analog voltage (KEY) input
24	AVDD	–	UNSW 5V
25	AV REF	I	A/D port reference input UNSW 5V
26	SCL 0	O	T BUS (clock)/IIC BUS (clock)
27	$\overline{\text{CG CS}}$	O	Character generator chip select signal
28	SDA 0	O	IIC BUS (data)
29	$\overline{\text{LED CS}}$	O	LED driver chip select signal
30	AVSS	–	Ground
31	EXTAL	O	System clock terminal (16MHz)
32	XTAL	I	System clock terminal (16MHz)
33	VSS	–	Ground
34	RST	I	RESET signal input
35	PLL CLK	O	TUNER PLL clock
36	PLL DATA	O	TUNER PLL data
37	PLL ENABLE	O	TUNER chip select
38	SAP DET	–	Not used (NTSC model only)
39	N. C	–	Not used
40	TA MUTE	O	TUNER audio mute signal output
41	DMS 2	I	DMS fowared/reverse signal input
42	DMS 1	I	DMS fowared/reverse signal input
43	VFDP	–	VFDP
44	SEG1	O	Segment terminal 1
45	SEG2	O	Segment terminal 2
46	SEG3	O	Segment terminal 3
47	SEG4	O	Segment terminal 4
48	SEG5	O	Segment terminal 5
49	SEG6	O	Segment terminal 6
50	SEG7	O	Segment terminal 7

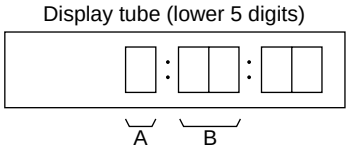
Pin No.	Pin Name	I/O	Function
51	SEG8	O	Segment terminal 8
52	SEG9	O	Segment terminal 9
53	SEG10	O	Segment terminal 10
54	SEG11	O	Segment terminal 11
55	SEG12	O	Segment terminal 12
56	SEG13	O	Segment terminal 13
57	SEG14	O	Segment terminal 14
58	SEG15	O	Segment terminal 15
59	SEG16	O	Segment terminal 16
60	N.C	–	Not used
61	N.C	–	Not used
62	N.C	–	Not used
63	N.C	–	Not used
64	N.C	–	Not used
65	N.C	–	Not used
66	GRID6	O	Grid terminal 6
67	GRID5	O	Grid terminal 5
68	GRID4	O	Grid terminal 4
69	GRID3	O	Grid terminal 3
70	GRID2	O	Grid terminal 2
71	GRID1	O	Grid terminal 1
72	VDD	–	UNSW5V
73	TX	I	Timer clock terminal (32KHz)
74	TEX	O	Timer clock terminal (32KHz)
75	NC/VPP	–	UNSW5V
76	$\overline{\text{ASURA CS}}$	O	S/S microcomputer chip signal
77	$\overline{\text{ASURA RESET}}$	O	System reset output
78	$\overline{\text{WC}}$	O	EEP ROM WRITE Control Signal
79	POWER CONT	O	Power supply control signal
80	CG V	I	Composite sync input

5-8. NICAM STEREO PROCESSOR PIN FUNCTION (NK-11 BOARD IC1)

Pin. No.	Pin Name	I/O	Function
1	OUTL	O	Analog output left
2	OUTR	O	Analog output right
3	VDDA1	–	Analog power supply; DAC circuitry
4	VSSA1	–	Analog ground; DAC circuitry
5	VSSD1	–	Digital ground; DAC circuitry
6	VDDD1	–	Digital power supply; DAC circuitry
7	VSSD2	–	Digital ground; DSP part
8	VDDD2	–	Digital power supply; DSP part
9	TP2	I	Additional test pin 2; connected to ground for normal operation
10	NICAM	–	Not used
11	TP1	I	Additional test pin 1; connected to ground for normal operation
12	PCLK	–	Not used
13	ADDR1	–	Not used
14	Vtune	O	Tuning voltage output for crystal oscillator
15	XTALI	I	Crystal oscillator input
16	XTALO	O	Crystal oscillator output
17	TEST2	I	Test pin 2; connected to ground for normal operation
18	Iref	I	Resistor for reference current generation; front end circuitry
19	ADDR2	–	Not used
20	VSSA2	–	Analog ground; analog front end circuitry
21	VDDA2	–	Analog power supply; analog front end circuitry
22	TEST1	I	Test pin 1; connected to ground for normal operation
23	SIF2	I	Sound IF input 2
24	Vref1	I	Reference voltage; analog front end circuitry
25	SIF1	I	Sound IF input 1
26	CRST		Capacitor for power-on reset
27	VSSD3	–	Digital supply; front end circuitry
28	VDDD3	–	Digital supply; front end circuitry
29	SCL	I	Serial communication signal (IIC CLOCK)
30	SDA	I	Serial communication signal (IIC DATA)
31	SDO	–	Not used
32	WS	–	Not used
33	SCK	–	Not used
34	SYSCLK	–	Not used
35	VDDD4	–	Digital power supply; demodulator circuitry
36	VSSD4	–	Digital ground; demodulator circuitry
37	P1	–	Not used
38	MONOIN	–	Not used
39	EXTIR	I	External audio input right channel
40	EXTIL	I	External audio input left channel
41	Vref2	I	Analog reference voltage digital-to-analog converter and operational amplifiers
42	P2	–	Not used
43	VDDA3	–	Analog power supply; operational amplifiers
44	VSSA3	–	Analog ground; operational amplifiers

SECTION 6
ERROR CODES

This set displays an error code, and a mode code in case of error on the display tube, if the operation stopped by error.
The following provides description concerned.



A: EMG code ..... Table 6-1
B: Mechanism position (Encoder) ..... Table 6-2

These codes are displayed at lower 5-digit positions of display tube.

Table 6-1. EMG Codes list

Code	Description
0	NO ERROR
1	CAM ENCODER ERROR, LOAD DIRECTION
2	CAM ENCODER ERROR, UNLOAD DIRECTION
3	T REEL ERROR
4	S REEL ERROR
5	CAPSTAN ERROR
6	DRUM ERROR
7	INITIALIZE ERROR
8	CASSETTE UNLOADING ERROR
9	RESERVED

Table 6-2. Mechanism position list

Code	Position	VTR status
0	NC	Other than the following positions
1	EJECT	EJECT (including POWER OFF)
2	CDOWN	Cassette at down position
3	ULDEND	Tape unloading end, DEW STOP
4	TLOAD	Tape loading
5	HCLEAN	Tape loading
6	LDEND	Tape loading end
7	RVS	RVS varying-speed play (including STILL, SLOW)
8	PR	For FWD, FWDP/RVS conversion
9	FWDP	FWD SLOW, FWD STILL
A	FWD	PB, FWD varying-speed play, STOP (DRUM ON)
B	STOP	STOP (DRUM OFF, POWER OFF)
C	FR	FF/REW

Display: □□
- Position when emergency occurred
- Position for which the mechanism destined

If the cam encoder alarm occurred when the mechanism was about to move forward, and it stopped at NC position,

Position for which mechanism destined = A (FWD)
Position when emergency occurred = 0 (NC),

accordingly, “A0” is displayed.

In case of emergency except cam encoder alarm or FL cassette compartment alarm, the cam motor does not run, and therefore if any emergency occurred at FWD position,

Position for which mechanism destined = A (FWD)
Position when emergency occurred = A (FWD),

accordingly, “AA” is displayed.

* NC code is output when the mechanism is moving between respective positions.

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustments on Page 7-6.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT VI.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) NTSC pattern generator
4) PAL pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio noise meter
8) Audio generator
9) Attenuator
10) Alignment tape
    Part Code: 8-192-605-36 KRV-51P (PAL)
    Part Code: 8-192-605-32 KRV-51N2 (NTSC)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

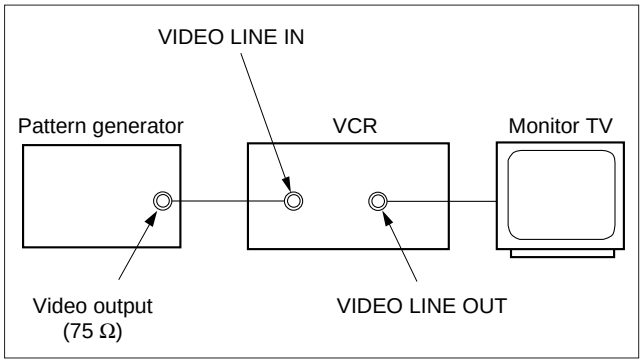


Fig. 7-2-1

2-1-3. Set-up of Adjustment

In this adjustment, PAL or NTSC pattern generator is connected with LINE input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

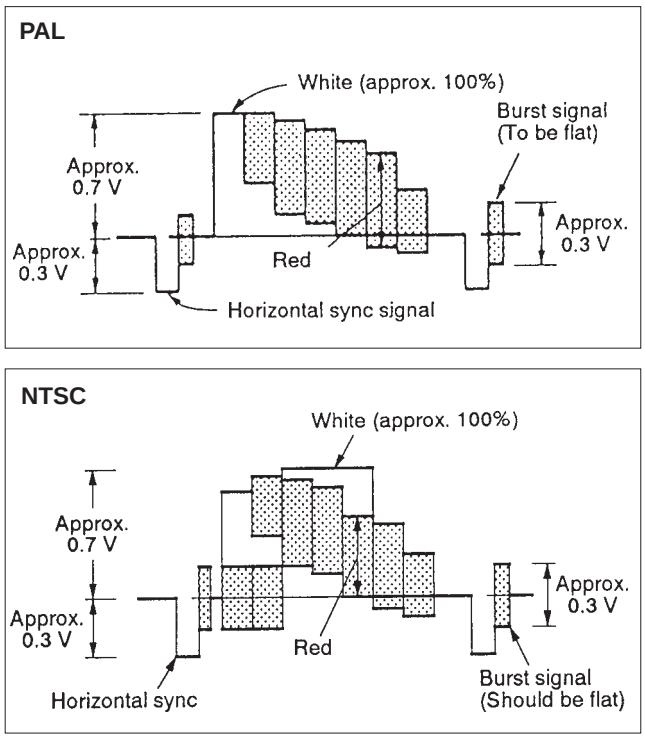


Fig. 7-2-2

2-1-4. Alignment Tapes [Alignment Tape (KRV-51N2 / KRV-51P)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400 Hz
2	SP	Three minutes	Monoscope	
3	EP	Seven minutes	Color bar	
4	EP	Three minutes	Monoscope	

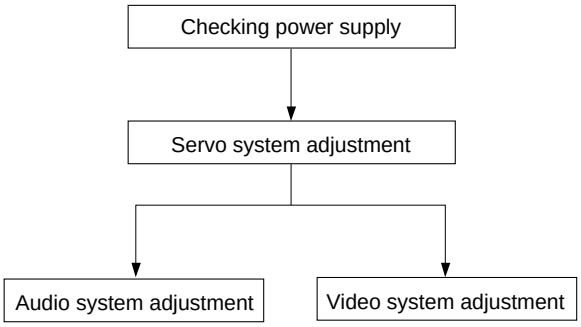
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack
	1 Vp-p, 75 Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks
	47 kW, –7.5 dBs (0 dBs = 0.775 Vrms)
	More than 10 kW, –4 dBs
Video outputs	LINE OUT: phono jack
	1 Vp-p, 75 Ω, unbalanced, sync negative
Audio outputs	LINE OUT: phono jacks
	–7.5 dBs at load impedance 47 kΩ
	Output impedance : less than 10 Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY ADJUSTMENT

2-2-1. Power Supply Check (SR-718 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
–10 V check	
Measurement Point	Pin ⑨ of CN600
Specified Value	–10.3 ±0.8 V
+6 V check	
Measurement Point	Pin ⑦, ⑧ of CN600
Specified Value	5.9 ± 0.2 V
+13 V check	
Measurement Point	Pin ②, ③ of CN600
Specified Value	13.3 ± 0.5 V
+35 V check	
Measurement Point	Pin ① of CN600
Specified Value	38.0 ± 3.0 V

Checking Method:

1) Confirm that each voltage meets its specified value.

2-2-2. +6 V Adjustment (SR-718 BOARD)

Mode	REC or PB
Measuring Instrument	Digital voltmeter
Measurement Point	Pin ⑦, ⑧ of CN201
Adjusting Element	RV201
Specified Value	5.9 ± 0.2 V

2-3. SERVO SYSTEM Adjustment

2-3-1. RF Switching Position Adjustment (MA-325 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.

Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: Pin ② of CN501 CH2: Pin ③ of CN501 (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5 ± 0.5 H (416 ± 32 µsec) PAL 6.5 ± 0.5 H (410 ± 32 µsec) NTSC

Adjusting Method:

1) Connect MA-325 board JS161 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Check appear “rFxx” on FL display.
3) Using the PROGRAM + and – buttons, adjust to 6.5 ± 0.5 H.
4) Press the PAUSE button.

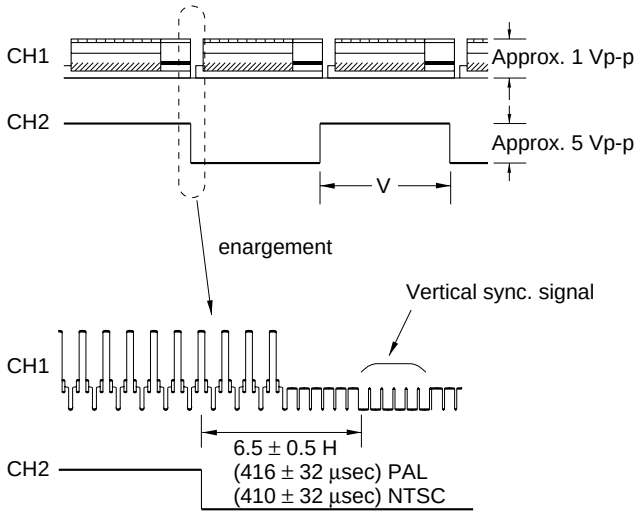


Fig. 7-2-3.

2-4. AUDIO SYSTEM ADJUSTMENTS

• Adjust both Lch and Rch.

[Connection]

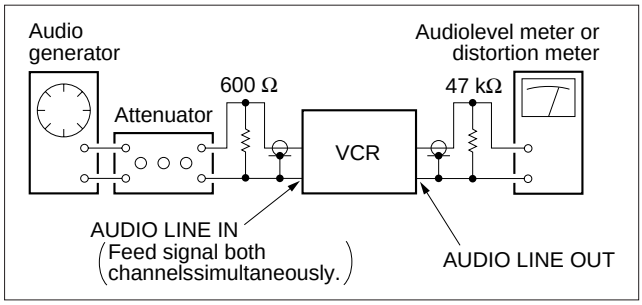


Fig. 7-2-4.

2-4-1. Hi-Fi Audio System Adjustment

• Set switches and knobs to the following positions to make adjustment unless otherwise specified.
INPUT SELECT switch ..... LINE
AUDIO MONITOR ..... STEREO

[Adjustment Sequence]

1. **AF Switching Position Adjustment**
2. **Frequency Responce Check**
3. **Overall Level Characteristic and Distortion Factor Check**
4. **Overall S/N Check**

1. AF Switching Position Adjustment (MA-325 Board)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets. When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH2: Pin ① of CN341 CH1: Pin ③ of CN501
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-5

Adjusting Method:

1) Connect MA-325 board JS161 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Press the PAUSE button to activate the AF switching position adjustment mode.
3) Check appear "HFxx" on FL display.
4) Using the PROGRAM + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the PAUSE button.
6) Press the EJECT button.

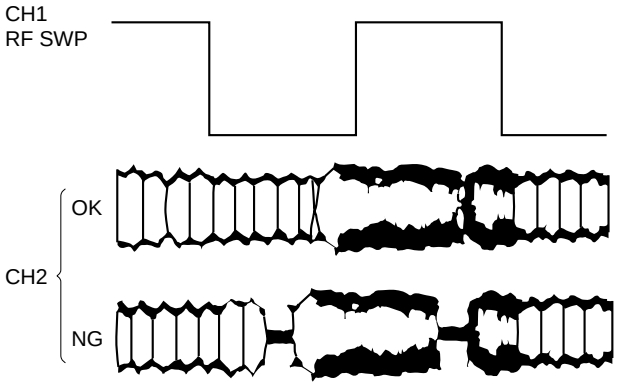


Fig. 7-2-5.

2. Frequency Responce Check

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP, EP, LP mode)
Signal	400 Hz, –7.5 dBs 20 Hz, –7.5 dBs 20 kHz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 2 dB

Note: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –7.5 dBs.
4) Make recording.
5) Set an audio line input signal to 20 Hz and make recording.
6) Set an audio line input signal to 20 kHz and make recording.
7) Playback a recorded portion, and measure output levels at 400 Hz and 20 Hz and 20 kHz.
8) Confirm that the 20 Hz and 20 kHz playback output level within a range of the 400 Hz playback output level 0 ± 2 dB.

3. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 2 dBs Distortion factor: 1% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ±2 dBs.
5) Confirm that a distortion factor is within 1%.

4. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–67.5 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –67.5 dBs.

2-4-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

[Adjustment Sequence]
1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Frequency Responce Check**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT VI.

2. E-E Output Level Check

Purpose:
Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5 ± 2 dBs

Confirmation Method:
1) Simultaneously input a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5 ± 2 dBs.

3. Frequency Responce Check

Purpose:
Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –30.0 dBs 7 kHz, –30.0 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 4 dB

Tape path adjustment must have been completed.

Confirmation Method:
1) Supply a signal of 400 Hz, –30.0 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –30.0 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 0 ± 4 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 3 dBs Distortion factor: 4% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ± 3 dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–46.0 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –46.0 dBs.

2-5. VIDEO SYSTEM ADJUSTMENT

2-5-1. VCO Oscillation Frequency Adjustment (MA-325 Board)

Purpose:
Adjust to set the character position on the screen.

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉖ of IC401
Measurement equipment	Oscilloscope (DC mode)
Adjusting Element	CT401
Specified value	2.75 ± 0.05 V

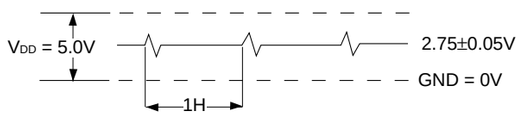
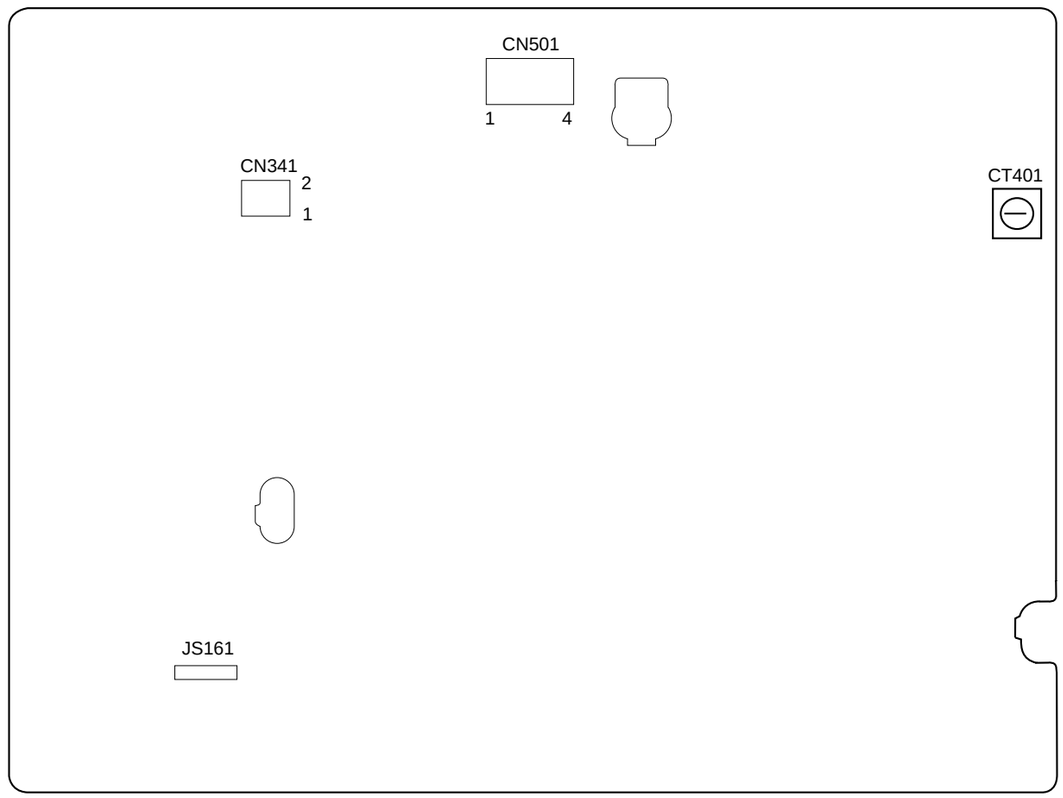


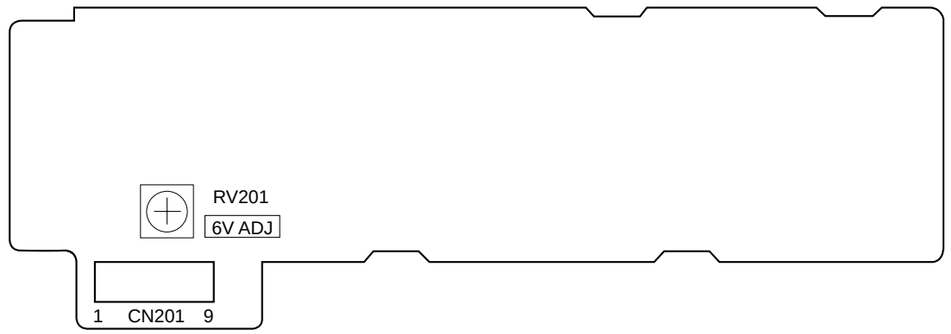
Fig. 7-2-6.

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

MA-325 BOARD (Side A)



SR-718 BOARD (Side A)



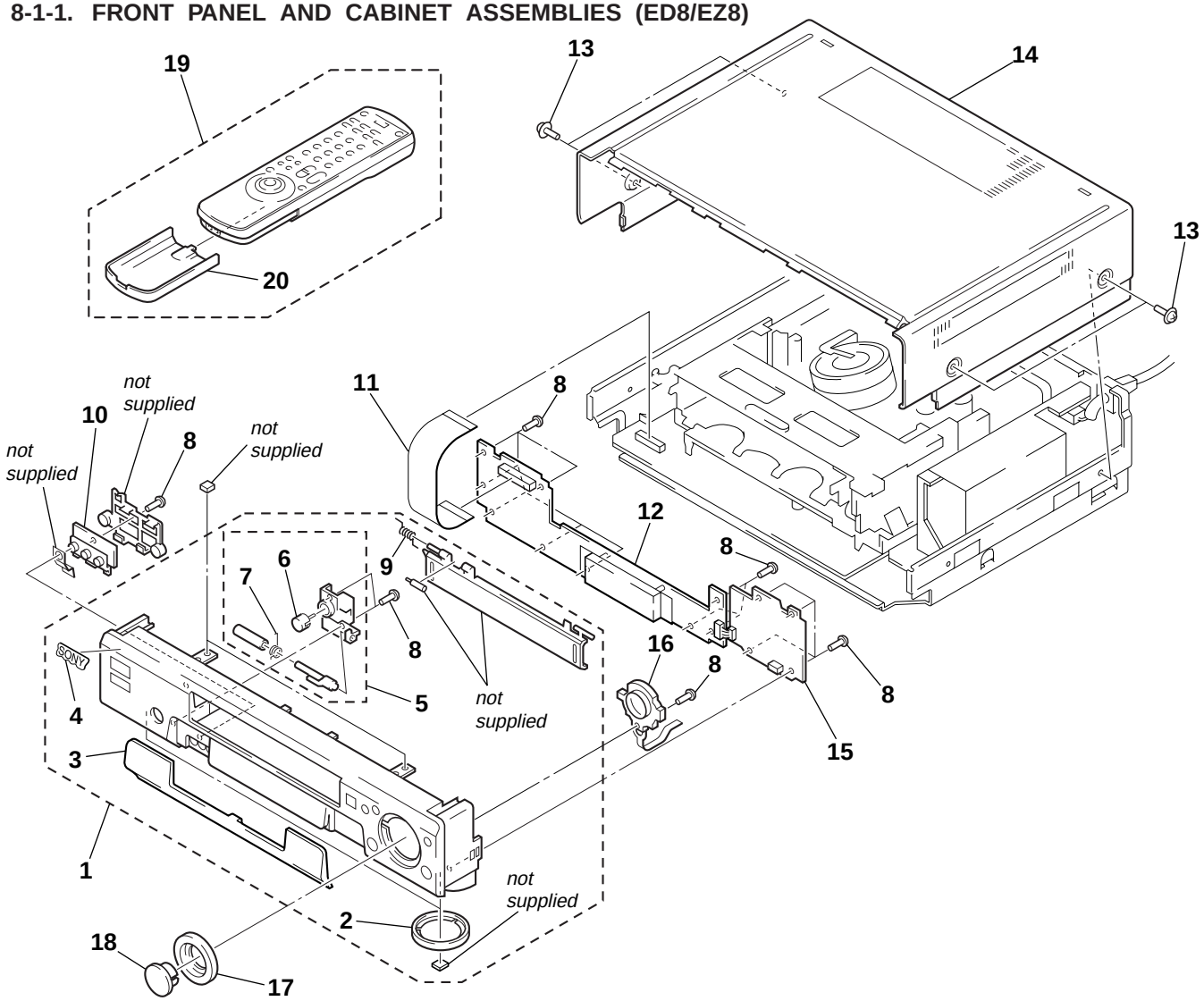
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

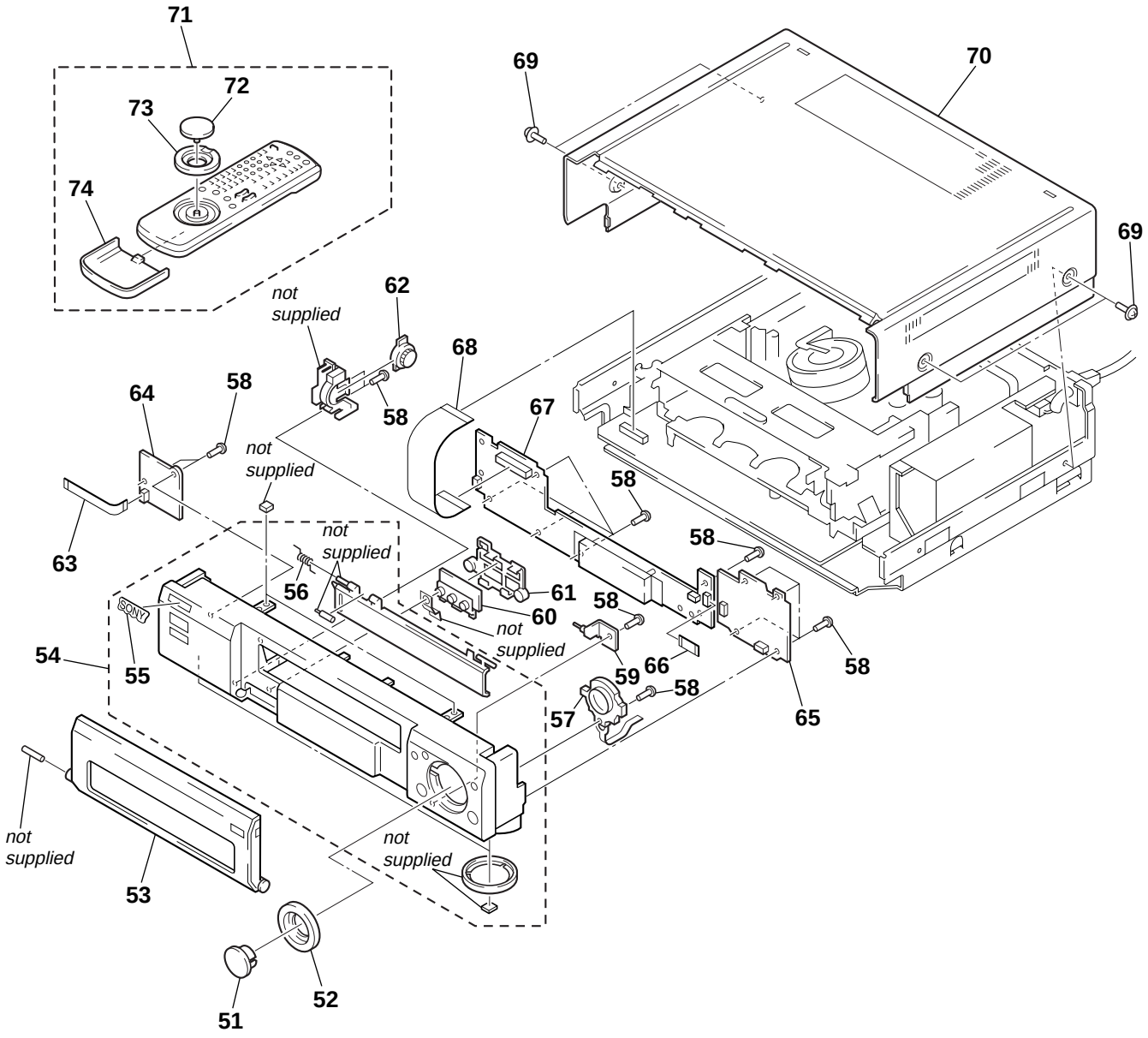
NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

8-1-1. FRONT PANEL AND CABINET ASSEMBLIES (ED8/EZ8)



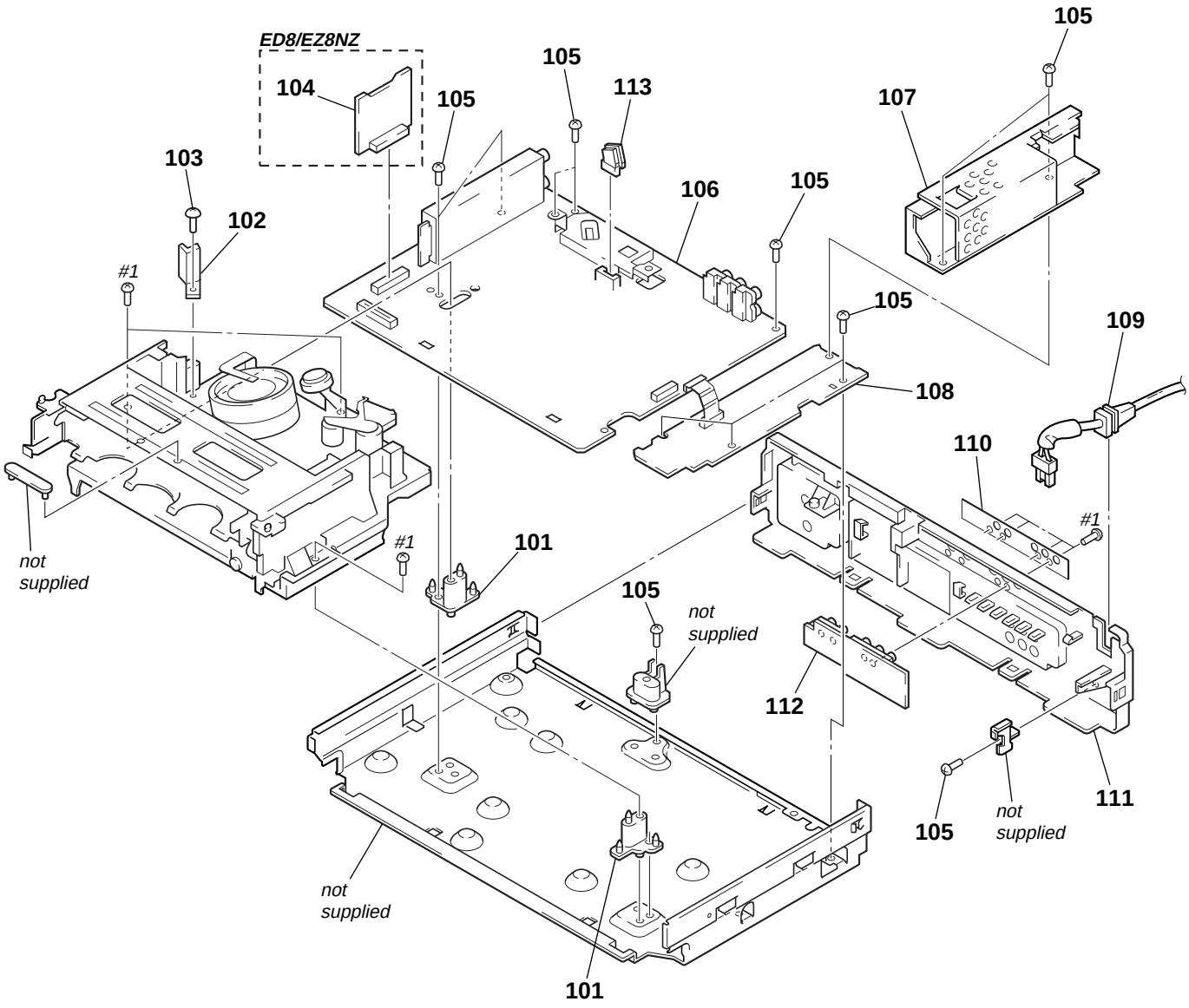
Ref. No.	Part No.	Description	Remark
1	X-3948-592-1	PANEL ASSY, FRONT (ED8)	
1	X-3948-593-1	PANEL ASSY, FRONT (EZ8AS)	
1	X-3948-594-1	PANEL ASSY, FRONT (EZ8NZ)	
* 2	3-977-160-01	INSULATOR (ED8)	
3	X-3948-226-1	DOOR ASSY, FRONT (EZ8)	
3	X-3948-596-1	DOOR ASSY, FRONT (ED8)	
4	3-943-995-01	EMBLEM (NO.5), SONY	
5	X-3948-597-1	LOCK ASSY, DOOR (ED8)	
6	3-987-701-01	BUTTON, OPEN (ED8)	
7	3-051-560-01	SPRING, DAMPER	
8	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
9	3-953-432-01	SPRING (GE), FL	
* 10	A-6791-628-A	IO-64 BOARD, COMPLETE	
11	1-783-849-11	CABLE, FLAT (FMF-30)	
* 12	A-6791-627-A	FR-137 BOARD, COMPLETE (ED8)	
* 12	A-6791-643-A	FR-137 BOARD, COMPLETE (EZ8)	
13	3-710-901-11	SCREW, TAPPING	
* 14	3-977-136-11	CASE, UPPER (ED8)	
* 14	3-977-136-41	CASE, UPPER (EZ8)	
* 15	A-6791-626-A	DM-77 BOARD, COMPLETE	
16	1-762-844-21	SWITCH, ROTARY	
17	3-979-310-01	RING (AV), JOG (EZ8)	
17	3-988-327-01	RING (M), JOG (ED8)	
18	3-979-309-01	BUTTON (AV), CENTER (EZ8)	
18	3-979-309-11	BUTTON (AV), CENTER (ED8)	
19	1-475-614-11	COMMANDER, STANDARD (RMT-V245)	
20	3-709-128-01	COVER, BATTERY	

8-1-2. FRONT PANEL AND CABINET ASSEMBLIES (EZ9)



Ref. No.	Part No.	Description	Remark
51	3-979-309-01	BUTTON (AV), CENTER	
52	3-989-330-01	RING, JOG	
53	1-475-835-11	SWITCH BLOCK, CONTROL	
54	X-3948-844-1	PANEL ASSY, FRONT	
55	3-943-995-01	EMBLEM (NO.5), SONY	
56	3-953-432-01	SPRING (GE), FL	
57	1-762-844-21	SWITCH, ROTARY	
58	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
59	X-3948-901-1	PLATE (RIGHT) ASSY, FULCRUM	
* 60	A-6791-628-A	IO-64 BOARD, COMPLETE	
61	3-050-306-01	HOLDER, JACK	
62	3-973-975-31	DAMPER, OIL	
63	1-783-851-11	CABLE, FLAT (FFS-6)	
* 64	A-6791-655-A	SW-307 BOARD, COMPLETE	
* 65	A-6791-653-A	DM-77 BOARD, COMPLETE	
66	1-783-850-11	CABLE, FLAT (FFD-3)	
* 67	A-6791-654-A	FR-137 BOARD, COMPLETE	
68	1-783-849-11	CABLE, FLAT (FMF-30)	
69	3-710-901-11	SCREW, TAPPING	
* 70	3-977-136-41	CASE, UPPER	
71	1-475-612-11	COMMANDER, STANDARD (RMT-V243)	
72	3-972-850-01	BUTTON, FUNCTION	
73	3-973-077-31	RING, CHANGE SPEED	
74	3-709-126-01	COVER, BATTERY	

8-1-3. CHASSIS ASSEMBLY

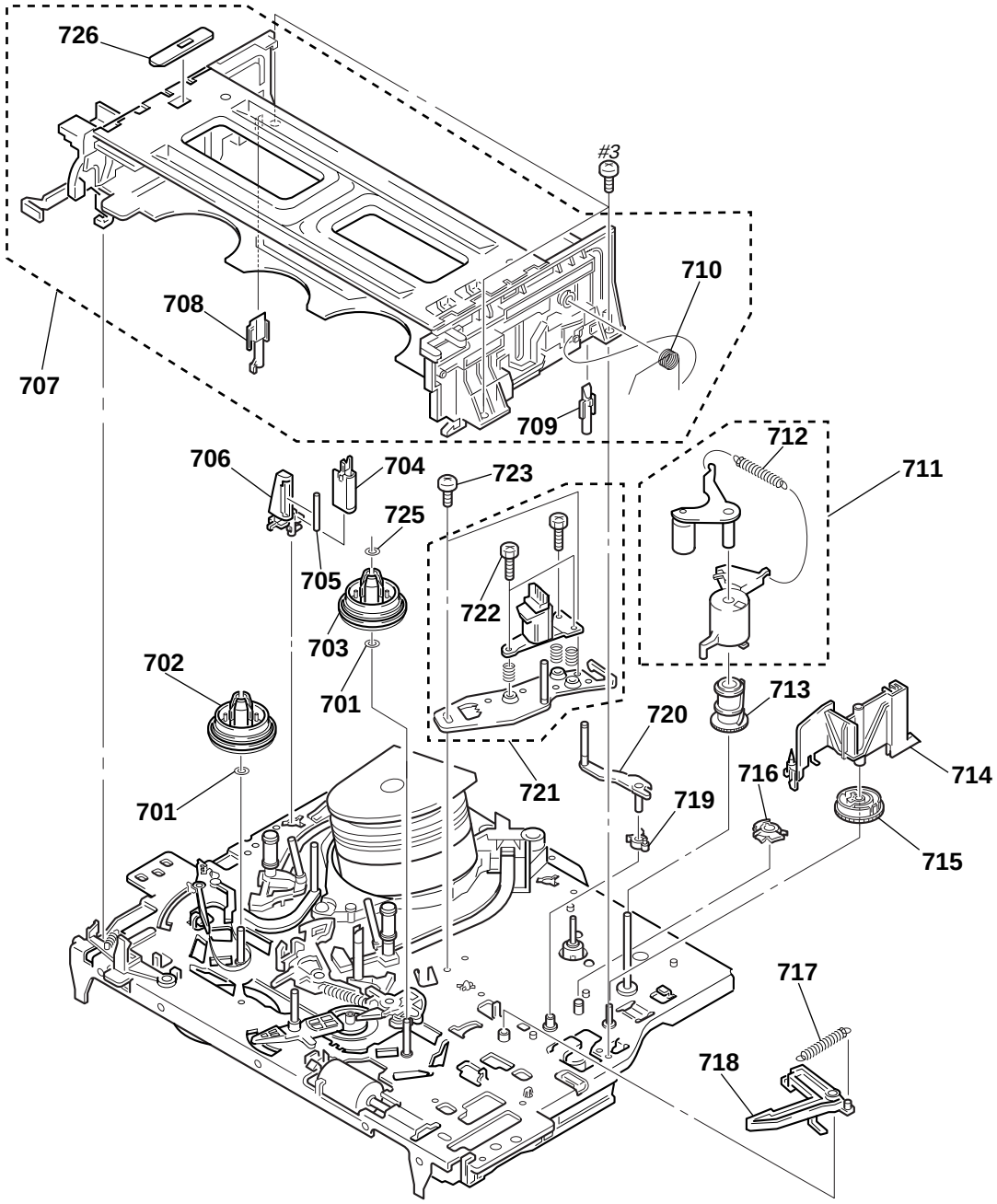


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	3-979-314-01	BASE (R), MD	
102	X-3947-568-1	TC (N17S) ASSY	
103	3-979-112-01	SCREW SW (+) BVTP 3X10	
* 104	A-6791-591-A	NK-11 BOARD, COMPLETE (ED8/EZ8NZ)	
105	3-970-608-21	SUMITITE (B3), +BV	
* 106	A-6791-624-A	MA-325 BOARD, COMPLETE (ED8)	
* 106	A-6791-641-A	MA-325 BOARD, COMPLETE (EZ8AS)	
* 106	A-6791-644-A	MA-325 BOARD, COMPLETE (EZ8NZ)	
* 106	A-6791-652-A	MA-325 BOARD, COMPLETE (EZ9)	
107	1-468-311-11	POWER BLOCK (SR-718)	
* 108	A-6791-623-A	PS-414 BOARD, COMPLETE	

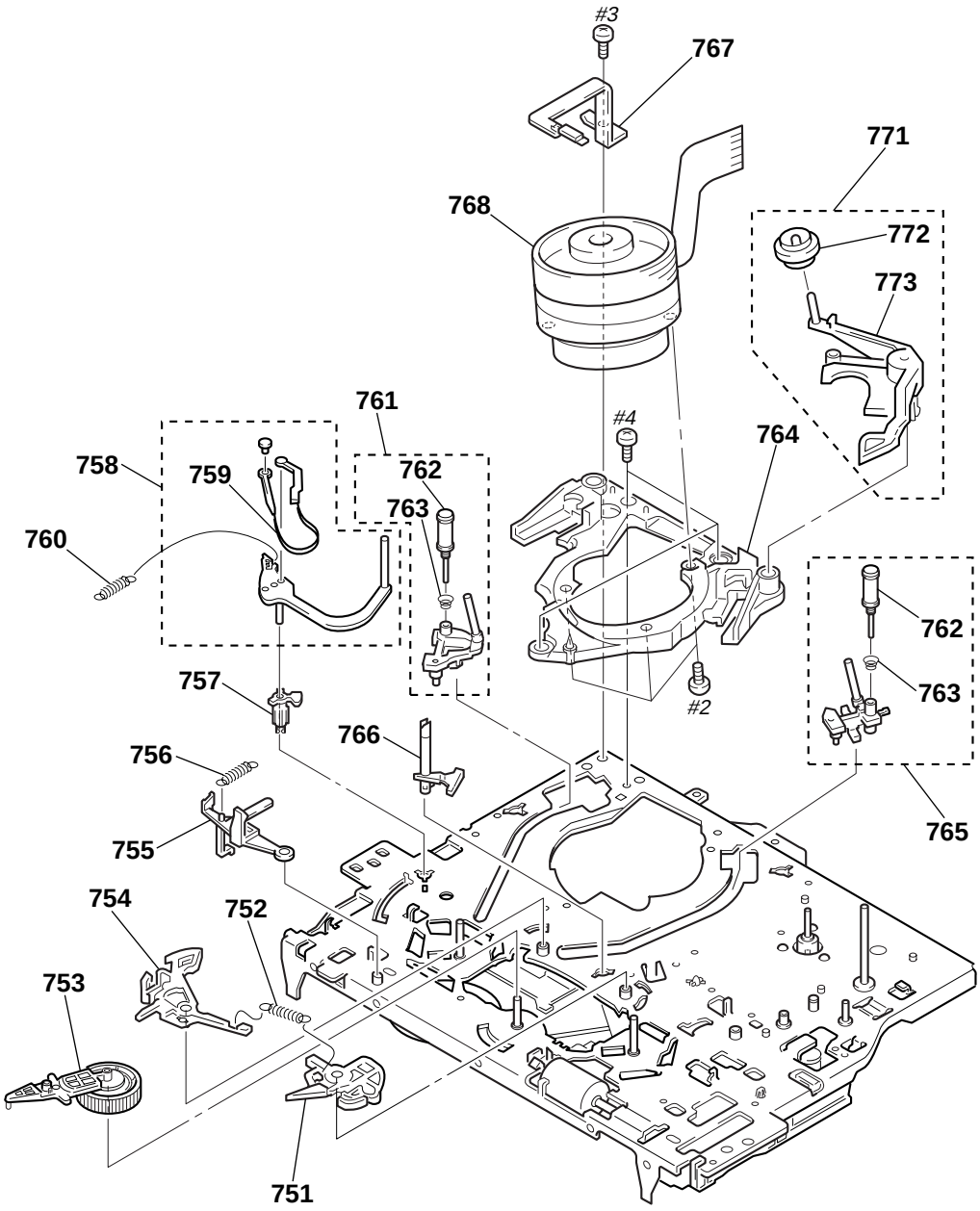
Ref. No.	Part No.	Description	Remark
⚠ 109	1-777-854-21	CORD, POWER (ED8)	
⚠ 109	1-777-855-22	CORD, POWER (EZ8/EZ9)	
110	3-987-913-42	PLATE, REAR JACK B (ED8/EZ9)	
110	3-987-913-52	PLATE, REAR JACK B (EZ8AS)	
110	3-987-913-62	PLATE, REAR JACK B (EZ8NZ)	
* 111	3-977-139-81	PANEL, REAR	
* 112	A-6791-625-A	RJ-79 BOARD, COMPLETE (ED8/EZ9)	
* 112	A-6791-642-A	RJ-79 BOARD, COMPLETE (EZ8AS)	
* 112	A-6791-645-A	RJ-79 BOARD, COMPLETE (EZ8NZ)	
113	1-779-725-11	CONNECTOR, BOARD TO BOARD 5P	
114	3-682-057-11	SPACER (SMALL)	

8-1-4. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL COMPLETE ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-01	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	
722	3-974-556-01	+ HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3X8	
725	3-977-443-01	WASHER, STOPPER	
726	3-987-560-02	PLATE, TOP, FL	

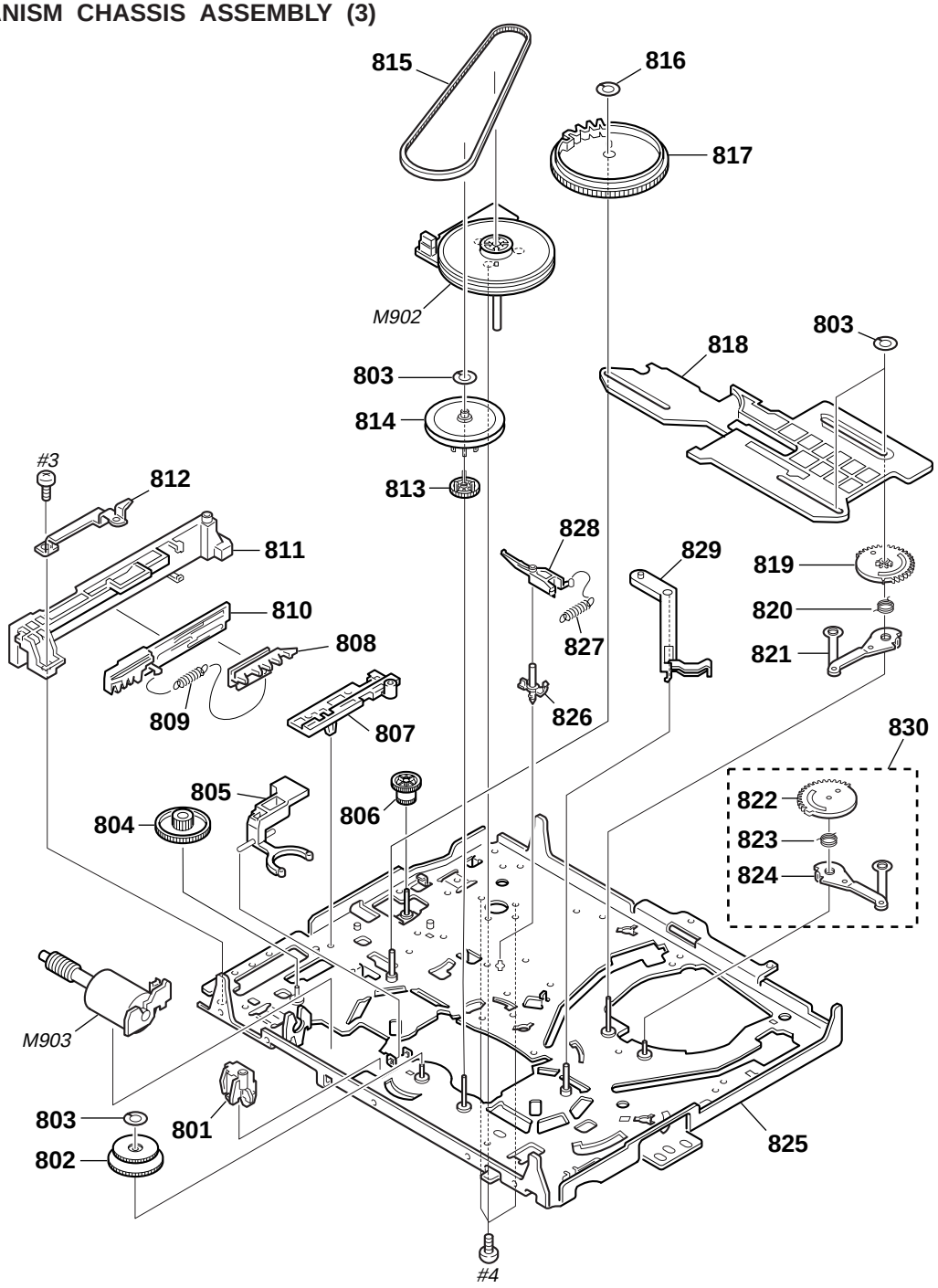
8-1-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
751	X-3947-581-1	BRAKE ASSY,MAIN (T)	
752	3-977-462-01	SPRING, EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-2	BRAKE ASSY, MAIN (S)	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	

Ref. No.	Part No.	Description	Remark
762	X-3944-378-1	ROLLER ASSY, GUIDE	
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	X-3943-899-8	GROUND ASSY, SHAFT	
768	8-839-045-02	DRUM ASSY DZH-95A/Z-RP	
771	A-6746-074-G	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-975-724-07	ARM, HC	

8-1-6. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
801	3-977-437-01	RETAINER,CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	

Ref. No.	Part No.	Description	Remark
817	3-977-439-01	GEAR, CAM	
818	3-977-442-01	SLIDER	
819	3-977-455-01	GEAR, LOADING(T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING (T)	
822	3-977-451-01	GEAR, LOADING (S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING (S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING(S)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6791-653-A	DM-77 BOARD, COMPLETE (EZ9)			
*	A-6791-626-A	DM-77 BOARD, COMPLETE (ED8/EZ8)			
		**********			
					(Ref.No. 1,000 Series)
		< CAPACITOR >			
C450	1-124-584-00	ELECT	100uF	20%	10V
C451	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN451	1-784-484-11	CONNECTOR, FFC/FPC 5P			
CN452	1-770-031-11	CONNECTOR, BOARD TO BOARD 7P (ED8/EZ8)			
CN453	1-691-066-21	HOUSING, CONNECTOR 7P (EZ9)			
		< DIODE >			
D459	8-719-056-06	DIODE SLR-342DCT31 (JOG)			
		< JUMPER RESISTOR >			
JR451	1-216-296-00	METAL CHIP	0	5%	1/8W
JR452	1-216-295-00	METAL CHIP	0	5%	1/10W
JR454	1-216-296-00	METAL CHIP	0	5%	1/8W
JR455	1-216-296-00	METAL CHIP	0	5%	1/8W
		< TRANSISTOR >			
Q450	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R459	1-216-033-00	METAL CHIP	220	5%	1/10W
R464	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R467	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R468	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R469	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R470	1-216-073-00	METAL CHIP	10K	5%	1/10W
R471	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R472	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R473	1-216-073-00	METAL CHIP	10K	5%	1/10W
R474	1-216-073-00	METAL CHIP	10K	5%	1/10W
R475	1-216-073-00	METAL CHIP	10K	5%	1/10W
R476	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S451	1-762-196-21	SWITCH, TACT (REC)			
S453	1-762-196-21	SWITCH, TACT (REW)			
S457	1-762-196-21	SWITCH, TACT (FF)			
S458	1-762-196-21	SWITCH, TACT (PAUSE)			
S459	1-762-196-21	SWITCH, TACT (JOG)			

Ref. No.	Part No.	Description			Remark
*	A-6791-654-A	FR-137 BOARD, COMPLETE (EZ9)			
*	A-6791-627-A	FR-137 BOARD, COMPLETE (ED8)			
*	A-6791-643-A	FR-137 BOARD, COMPLETE (EZ8)			
		**********			
					(Ref.No. 1,000 Series)
	3-050-305-01	HOLDER, FL (EZ9)			
	3-987-885-01	HOLDER (P6), FL (ED8/EZ8)			
		< BUZZER >			
BZ301	1-529-104-11	BUZZER, PIEZOELECTRIC			
		< CAPACITOR >			
C301	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C302	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C303	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C304	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C306	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C307	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C308	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C309	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C310	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C311	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C312	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C313	1-126-935-11	ELECT	470uF	20%	6.3V
C314	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C315	1-126-935-11	ELECT	470uF	20%	6.3V
C316	1-126-916-11	ELECT	1000uF	20%	6.3V
C317	1-104-905-11	CAPACITOR	0.22F		5.5V
C334	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C335	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (EZ9)
C336	1-162-306-11	CERAMIC	0.01uF	20%	16V
C337	1-162-306-11	CERAMIC	0.01uF	20%	16V
C338	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (EZ9)
C339	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (EZ9)

FR-137

Ref. No.	Part No.	Description			Remark
C340	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V (ED8/EZ8)
C341	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN302	1-691-036-21	HOUSING, CONNECTOR 4P (EZ9)			
* CN303	1-695-352-11	PIN, CONNECTOR (PC BOARD) 29P			
* CN307	1-691-406-11	CONNECTOR, BOARD TO BOARD 7P (ED8/EZ8)			
CN308	1-784-484-11	CONNECTOR, FFC/FPC 5P (EZ9)			
CN309	1-691-066-21	HOUSING, CONNECTOR 7P (EZ9)			
		< DIODE >			
D307	8-719-109-93	DIODE RD6.2ES-B2			
D308	8-719-950-60	DIODE MPG06D-6052PKG23			
D309	8-719-950-60	DIODE MPG06D-6052PKG23			
D311	8-719-017-09	DIODE 02DZ6.2-TPH3			
D318	8-719-056-07	DIODE SLR-342MCT31 (ON/STANDBY)			(ED8/EZ8)
D319	8-719-017-09	DIODE 02DZ6.2-TPH3			
		< IC >			
IC301	8-752-896-84	IC CXP82948-037Q (EZ8/EZ9)			
IC301	8-752-896-55	IC CXP82948-036Q (ED8)			
IC302	8-759-248-87	IC MM1256XF-BE			
IC303	8-759-432-32	IC ST24W04FM6TR			
IC304	8-749-011-05	IC GP1U28X (ED8/EZ8)			
		< JUMPER RESISTOR >			
JR301	1-216-296-00	METAL CHIP	0	5%	1/8W
JR302	1-216-296-00	METAL CHIP	0	5%	1/8W
JR304	1-216-295-00	METAL CHIP	0	5%	1/10W
JR306	1-216-296-00	METAL CHIP	0	5%	1/8W
JR307	1-216-295-00	METAL CHIP	0	5%	1/10W
JR308	1-216-295-00	METAL CHIP	0	5%	1/10W
JR309	1-216-296-00	METAL CHIP	0	5%	1/8W
JR310	1-216-296-00	METAL CHIP	0	5%	1/8W
JR311	1-216-296-00	METAL CHIP	0	5%	1/8W
JR315	1-216-296-00	METAL CHIP	0	5%	1/8W
JR316	1-216-295-00	METAL CHIP	0	5%	1/10W
JR317	1-216-296-00	METAL CHIP	0	5%	1/8W
JR319	1-216-296-00	METAL CHIP	0	5%	1/8W
JR320	1-216-295-00	METAL CHIP	0	5%	1/10W
JR321	1-216-296-00	METAL CHIP	0	5%	1/8W
JR322	1-216-296-00	METAL CHIP	0	5%	1/8W
		< COIL >			
L301	1-414-938-21	INDUCTOR	47uH		
L302	1-414-938-21	INDUCTOR	47uH (EZ9)		
L303	1-414-932-21	INDUCTOR	4.7uH		
L304	1-414-932-21	INDUCTOR	4.7uH		
		< FLUORECENT INDICATOR >			
ND320	1-517-734-31	TUBE, FLUORESCENT INDICATOR (EZ9)			
ND320	1-517-734-21	TUBE, FLUORESCENT INDICATOR (ED8/EZ8)			
		< TRANSISTOR >			
Q300	8-729-421-22	TRANSISTOR UN2211 (ED8/EZ8)			
		< RESISTOR >			
R301	1-216-025-91	RES,CHIP	100	5%	1/10W
R302	1-216-295-00	METAL CHIP	0	5%	1/10W
R303	1-249-417-11	CARBON	1K	5%	1/4W
R304	1-216-049-00	METAL CHIP	1K	5%	1/10W
R305	1-216-049-00	METAL CHIP	1K	5%	1/10W
R306	1-216-089-00	METAL CHIP	47K	5%	1/10W
R307	1-216-049-00	METAL CHIP	1K	5%	1/10W
R308	1-216-113-00	METAL CHIP	470K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-073-00	METAL CHIP	10K	5%	1/10W
R311	1-216-295-00	METAL CHIP	0	5%	1/10W
R312	1-216-198-91	RES,CHIP	1K	5%	1/8W
R313	1-249-417-11	CARBON	1K	5%	1/4W
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W
R315	1-216-095-00	METAL CHIP	82K	5%	1/10W
R316	1-216-041-00	METAL CHIP	470	5%	1/10W
R317	1-247-807-31	CARBON	100	5%	1/4W
R318	1-247-807-31	CARBON	100	5%	1/4W
R319	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R320	1-216-041-00	METAL CHIP	470	5%	1/10W
R321	1-216-025-91	RES,CHIP	100	5%	1/10W
R322	1-216-025-91	RES,CHIP	100	5%	1/10W
R323	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R324	1-249-417-11	CARBON	1K	5%	1/4W
R325	1-216-049-00	METAL CHIP	1K	5%	1/10W
R326	1-216-049-00	METAL CHIP	1K	5%	1/10W
R327	1-216-095-00	METAL CHIP	82K	5%	1/10W
R328	1-216-113-00	METAL CHIP	470K	5%	1/10W
R329	1-216-190-00	RES,CHIP	470	5%	1/8W (EZ9)
R329	1-216-296-00	METAL CHIP	0	5%	1/8W (ED8/EZ8)
R334	1-216-073-00	METAL CHIP	10K	5%	1/10W
R337	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8/EZ8)
R338	1-216-029-00	METAL CHIP	150	5%	1/10W (ED8/EZ8)
R340	1-216-682-11	METAL CHIP	20K	0.5%	1/10W (ED8/EZ8)
R341	1-208-812-11	RES,CHIP	18K	0.50%	1/10W (ED8/EZ8)
R342	1-216-083-00	METAL CHIP	27K	5%	1/10W (ED8/EZ8)
R343	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (ED8/EZ8)
R347	1-216-095-00	METAL CHIP	82K	5%	1/10W
		< SWITCH >			
S300	1-762-196-21	SWITCH, TACT (ON/STANDBY) (ED8/EZ8)			
S301	1-762-196-21	SWITCH, TACT (PROGRAM-) (ED8/EZ8)			
S302	1-762-196-21	SWITCH, TACT (SP/LP/EP) (ED8/EZ8)			
S303	1-762-196-21	SWITCH, TACT (PROGRAM+) (ED8/EZ8)			
S304	1-762-196-21	SWITCH, TACT (COLOR SYSTEM) (ED8/EZ8)			
S305	1-762-196-21	SWITCH, TACT (ONE TOUCH TUNING)			(ED8/EZ8)
S306	1-762-196-21	SWITCH, TACT (EASY TIMER) (ED8/EZ8)			
S309	1-762-196-21	SWITCH, TACT (EJECT)			
		< VIBRATOR >			
X301	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)			
X302	1-579-930-12	VIBRATOR, CERAMIC (16MHz)			

Ref. No.	Part No.	Description			Remark
*	A-6791-628-A	IO-64 BOARD, COMPLETE			
		**********			
		(Ref.No. 1,000 Series)			
		< CONNECTOR >			
* CN480	1-568-943-11	PIN, CONNECTOR 5P			
		< JACK >			
CNJ480	1-774-509-11	JACK, PIN 3P (LINE-2 IN)			
		< DIODE >			
D480	8-719-109-93	DIODE RD6.2ES-B2			
D481	8-719-108-12	DIODE RD9.1E-W			
D482	8-719-017-09	DIODE 02DZ6.2-TPH3			
D490	8-719-108-12	DIODE RD9.1E-W			
D491	8-719-108-12	DIODE RD9.1E-W			
		< JUMPER RESISTOR >			
JR480	1-216-296-00	METAL CHIP	0	5%	1/8W
JS490	1-216-295-00	METAL CHIP	0	5%	1/10W
		< RESISTOR >			
R480	1-216-022-00	METAL CHIP	75	5%	1/10W
R481	1-216-295-00	METAL CHIP	0	5%	1/10W
R490	1-216-295-00	METAL CHIP	0	5%	1/10W
R491	1-216-295-00	METAL CHIP	0	5%	1/10W
*	A-6791-652-A	MA-325 BOARD, COMPLETE (EZ9)			
*	A-6791-624-A	MA-325 BOARD, COMPLETE (ED8)			
*	A-6791-641-A	MA-325 BOARD, COMPLETE (EZ8AS)			
*	A-6791-644-A	MA-325 BOARD, COMPLETE (EZ8NZ)			
		**********			
		(Ref.No. 2,000 Series)			
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
		< CAPACITOR >			
C002	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C004	1-126-160-11	ELECT	1uF	20%	50V
C022	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C023	1-124-589-11	ELECT	47uF	20%	16V
C025	1-126-160-11	ELECT	1uF	20%	50V
C026	1-124-584-00	ELECT	100uF	20%	10V
C027	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C071	1-124-589-11	ELECT	47uF	20%	16V
C081	1-124-589-11	ELECT	47uF	20%	16V
C082	1-137-462-11	FILM	0.018uF	5%	100V
C083	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C084	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C091	1-124-589-11	ELECT	47uF	20%	16V
C092	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C094	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C095	1-104-697-11	FILM	0.047uF	5%	100V
C100	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C103	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C104	1-128-057-11	ELECT	330uF	20%	6.3V
C109	1-124-589-11	ELECT	47uF	20%	16V
C113	1-124-589-11	ELECT	47uF	20%	16V
C114	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C131	1-128-499-11	ELECT	220uF	20%	16V
C133	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C134	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C141	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C143	1-130-489-00	MYLAR	0.033uF	5%	50V
C144	1-137-441-11	FILM	0.027uF	5%	50V
C145	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C163	1-124-589-11	ELECT	47uF	20%	16V
C164	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C165	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C166	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C167	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C168	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C169	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C202	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
C202	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED8)
C203	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C204	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C205	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C206	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C207	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C208	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C209	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C211	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C212	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C213	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C214	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C215	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C216	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C217	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C219	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C220	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C221	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C222	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C223	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C224	1-124-248-00	ELECT	22uF	20%	35V
C226	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C227	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C228	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C229	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C230	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C231	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C232	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C234	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C235	1-126-157-11	ELECT	10uF	20%	16V
C237	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C238	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C239	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C240	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C241	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C243	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C244	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C246	1-124-589-11	ELECT	47uF	20%	16V
C247	1-126-157-11	ELECT	10uF	20%	16V
C248	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C251	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C252	1-163-038-00	CERAMIC CHIP	0.1uF		25V

MA-325

Ref. No.	Part No.	Description			Remark
C253	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C254	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C255	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C257	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED8/EZ9)
C258	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C259	1-117-720-11	CERAMIC CHIP	4.7uF		10V (ED8/EZ9)
C261	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C262	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C263	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED8/EZ9)
C264	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED8/EZ9)
C301	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C302	1-124-589-11	ELECT	47uF	20%	16V
C305	1-126-160-11	ELECT	1uF	20%	50V
C306	1-126-160-11	ELECT	1uF	20%	50V
C307	1-126-157-11	ELECT	10uF	20%	16V
C308	1-124-589-11	ELECT	47uF	20%	16V
C309	1-126-163-11	ELECT	4.7uF	20%	50V
C310	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C311	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C312	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C313	1-126-157-11	ELECT	10uF	20%	16V
C314	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C315	1-126-160-11	ELECT	1uF	20%	50V
C317	1-126-163-11	ELECT	4.7uF	20%	50V
C318	1-124-589-11	ELECT	47uF	20%	16V
C340	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C342	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C346	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C350	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C352	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C353	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C357	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C358	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C359	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C360	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C361	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C362	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C363	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C364	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C365	1-126-160-11	ELECT	1uF	20%	50V
C366	1-126-160-11	ELECT	1uF	20%	50V
C367	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C368	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C369	1-126-157-11	ELECT	10uF	20%	16V
C370	1-126-157-11	ELECT	10uF	20%	16V
C371	1-126-157-11	ELECT	10uF	20%	16V
C372	1-126-157-11	ELECT	10uF	20%	16V
C373	1-126-157-11	ELECT	10uF	20%	16V
C374	1-126-160-11	ELECT	1uF	20%	50V
C375	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C376	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C377	1-126-967-11	ELECT	47uF	20%	50V
C378	1-126-964-11	ELECT	10uF	20%	50V
C379	1-126-961-11	ELECT	2.2uF	20%	50V
C380	1-126-964-11	ELECT	10uF	20%	50V
C381	1-126-967-11	ELECT	47uF	20%	50V
C382	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C383	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C384	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C385	1-126-933-11	ELECT	100uF	20%	16V
C386	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C391	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-124-589-11	ELECT	47uF	20%	16V
C403	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C404	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C405	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C406	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C407	1-130-481-00	MYLAR	0.0068uF	5%	50V
C408	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C409	1-137-372-11	FILM	0.022uF	5%	50V
C410	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C411	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C412	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C414	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C415	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C416	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C417	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C418	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C419	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C501	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C502	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C503	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C504	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C505	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C506	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C507	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C508	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C511	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C512	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C513	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C514	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C515	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C516	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C517	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C518	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C519	1-124-584-00	ELECT	100uF	20%	10V
C520	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C521	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C522	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C523	1-124-584-00	ELECT	100uF	20%	10V
C524	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C526	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C527	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C529	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C701	1-126-933-11	ELECT	100uF	20%	16V
C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C703	1-104-664-11	ELECT	47uF	20%	16V
C704	1-126-933-11	ELECT	100uF	20%	16V
C705	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C706	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C709	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C710	1-126-963-11	ELECT	4.7uF	20%	50V
C711	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

Ref. No.	Part No.	Description			Remark
C712	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C713	1-126-933-11	ELECT	100uF	20%	16V
C714	1-126-933-11	ELECT	100uF	20%	16V
C715	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C716	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C717	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C718	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C719	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C720	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C721	1-126-767-11	ELECT	1000uF	20%	16V
C722	1-104-664-11	ELECT	47uF	20%	16V (ED8/EZ8AS/EZ9)
C726	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (EZ8NZ)
C727	1-163-038-00	CERAMIC CHIP	0.1uF		25V (EZ8NZ)
C750	1-126-964-11	ELECT	10uF	20%	50V
C751	1-126-964-11	ELECT	10uF	20%	50V
C752	1-126-964-11	ELECT	10uF	20%	50V
C753	1-104-664-11	ELECT	47uF	20%	16V
C754	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C755	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (ED8/EZ8NZ)
C756	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (ED8/EZ8NZ)
C757	1-137-372-11	FILM	0.022uF	5%	50V (ED8)
C758	1-130-481-00	MYLAR	0.0068uF	5%	50V (ED8)
C902	1-126-935-11	ELECT	470uF	20%	6.3V
C904	1-104-664-11	ELECT	47uF	20%	16V
C906	1-126-960-11	ELECT	1uF	20%	50V
C907	1-126-960-11	ELECT	1uF	20%	50V
C911	1-104-664-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN101	1-779-724-11	CONNECTOR, BOARD TO BOARD 5P			
CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P			
* CN103	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P			
* CN105	1-695-352-11	PIN, CONNECTOR (PC BOARD) 29P			
CN161	1-506-468-11	PIN, CONNECTOR 3P			
CN162	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			
CN301	1-506-469-11	PIN, CONNECTOR 4P			
CN302	1-506-468-11	PIN, CONNECTOR 3P			
* CN341	1-560-890-00	PIN, CONNECTOR 2P			
* CN361	1-568-954-11	PIN, CONNECTOR 5P (ED8/EZ8NZ/EZ9)			
CN423	1-766-278-11	PIN, CONNECTOR (PC BOARD) 5P			
* CN501	1-560-892-00	PIN, CONNECTOR 4P			
CN502	1-784-492-11	CONNECTOR, FFC/FPC 13P			
CN751	1-691-170-11	PIN, CONNECTOR 13P (ED8/EZ8NZ)			
* CN901	1-568-955-11	PIN, CONNECTOR 6P			
		< JACK >			
CNJ901	1-779-011-11	JACK, PIN 6P (LINE-1 IN/OUT)			
		< TRIMMER >			
CT401	1-141-334-11	CAP, TRIMMER 30PF (VCO ADJ)			
		< DIODE >			
D102	8-719-048-26	DIODE GL528V1			
D103	8-719-200-82	DIODE 11ES2			
D104	8-719-200-82	DIODE 11ES2			
D130	8-719-200-82	DIODE 11ES2			
D141	8-719-911-19	DIODE 1SS119			
D161	8-719-200-82	DIODE 11ES2			
D360	8-719-109-93	DIODE RD6.2ES-B2			
D401	8-719-911-19	DIODE 1SS119			
D402	8-719-911-19	DIODE 1SS119			
D403	8-719-911-19	DIODE 1SS119			
D701	8-719-109-85	DIODE RD5.1ES-B2			
D702	8-719-911-19	DIODE 1SS119			
D704	8-719-150-92	DIODE RD33ES-T1B			
D750	8-719-911-19	DIODE 1SS119			
D902	8-719-109-93	DIODE RD6.2ES-B2			
		< FERRITE BEAD >			
FB701	1-410-397-21	FERRITE BEAD INDUCTOR			
		< IC >			
IC001	8-759-100-93	IC uPC393G2			
IC021	8-759-438-83	IC BA6305F-E2			
IC071	8-759-499-30	IC BA7755AF-E2			
IC101	8-759-702-02	IC NJM062M			
IC130	8-759-481-46	IC LB1943			
IC161	8-752-896-56	IC CXP87948-012Q			
IC201	8-759-492-90	IC LA71504M-MPB			
IC202	8-759-439-51	IC LC89978M-TE-L			
IC203	8-759-295-66	IC BA7653AF-E2 (ED8/EZ9)			
IC340	8-759-486-92	IC LA7256			
IC360	8-759-486-64	IC TDA9615H/N1,557			
IC401	8-759-539-54	IC LC74761M-9716-TLM			
IC501	8-759-352-17	IC HA118195NT			
IC702	8-759-433-44	IC MM1031XML (EZ8NZ)			
IC750	1-475-743-11	IC STEREO MODULE, GERMAN(MPX-574) (EZ8AS/EZ9)			
IC901	8-759-454-62	IC uPC4558G2-E2			
		< JUMPER RESISTOR >			
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W
JR002	1-216-295-00	METAL CHIP	0	5%	1/10W
JR003	1-216-295-00	METAL CHIP	0	5%	1/10W
JR004	1-216-295-00	METAL CHIP	0	5%	1/10W
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W
JR006	1-216-295-00	METAL CHIP	0	5%	1/10W
JR007	1-216-295-00	METAL CHIP	0	5%	1/10W
JR008	1-216-295-00	METAL CHIP	0	5%	1/10W
JR009	1-216-295-00	METAL CHIP	0	5%	1/10W
JR010	1-216-295-00	METAL CHIP	0	5%	1/10W
JR011	1-216-295-00	METAL CHIP	0	5%	1/10W
JR012	1-216-295-00	METAL CHIP	0	5%	1/10W
JR013	1-216-295-00	METAL CHIP	0	5%	1/10W
JR014	1-216-295-00	METAL CHIP	0	5%	1/10W
JR015	1-216-295-00	METAL CHIP	0	5%	1/10W
JR016	1-216-295-00	METAL CHIP	0	5%	1/10W
JR017	1-216-295-00	METAL CHIP	0	5%	1/10W
JR018	1-216-295-00	METAL CHIP	0	5%	1/10W
JR019	1-216-295-00	METAL CHIP	0	5%	1/10W
JR020	1-216-295-00	METAL CHIP	0	5%	1/10W
JR021	1-216-295-00	METAL CHIP	0	5%	1/10W
JR201	1-216-296-00	METAL CHIP	0	5%	1/8W

Ref. No.	Part No.	Description			Remark
JR202	1-216-296-00	METAL CHIP	0	5%	1/8W
JR203	1-216-296-00	METAL CHIP	0	5%	1/8W
JR204	1-216-296-00	METAL CHIP	0	5%	1/8W
JR205	1-216-296-00	METAL CHIP	0	5%	1/8W
JR206	1-216-296-00	METAL CHIP	0	5%	1/8W
JR207	1-216-296-00	METAL CHIP	0	5%	1/8W
JR208	1-216-296-00	METAL CHIP	0	5%	1/8W
JR209	1-216-296-00	METAL CHIP	0	5%	1/8W
JR210	1-216-296-00	METAL CHIP	0	5%	1/8W
JR211	1-216-296-00	METAL CHIP	0	5%	1/8W
JR212	1-216-296-00	METAL CHIP	0	5%	1/8W
JR213	1-216-296-00	METAL CHIP	0	5%	1/8W
JR214	1-216-296-00	METAL CHIP	0	5%	1/8W
JR215	1-216-296-00	METAL CHIP	0	5%	1/8W
JR216	1-216-296-00	METAL CHIP	0	5%	1/8W
JR217	1-216-296-00	METAL CHIP	0	5%	1/8W
JR218	1-216-296-00	METAL CHIP	0	5%	1/8W
JR219	1-216-296-00	METAL CHIP	0	5%	1/8W
JR220	1-216-296-00	METAL CHIP	0	5%	1/8W
JR221	1-216-296-00	METAL CHIP	0	5%	1/8W
JR222	1-216-296-00	METAL CHIP	0	5%	1/8W
JR223	1-216-296-00	METAL CHIP	0	5%	1/8W
JR224	1-216-296-00	METAL CHIP	0	5%	1/8W
JR225	1-216-296-00	METAL CHIP	0	5%	1/8W
JS201	1-216-295-00	METAL CHIP	0	5%	1/10W
JS205	1-216-295-00	METAL CHIP	0	5%	1/10W
JS206	1-216-295-00	METAL CHIP	0	5%	1/10W
JS209	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8NZ)
JS700	1-216-295-00	METAL CHIP	0	5%	1/10W
JS701	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS702	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS703	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS704	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS705	1-216-295-00	METAL CHIP	0	5%	1/10W
JS706	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS708	1-216-295-00	METAL CHIP	0	5%	1/10W
JS710	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS711	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS712	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS713	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS714	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS715	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ8/EZ9)
JS718	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
		< COIL >			
L001	1-414-940-21	INDUCTOR	100uH		
L071	1-414-940-21	INDUCTOR	100uH		
L081	1-414-940-21	INDUCTOR	100uH		
L091	1-410-687-11	INDUCTOR	1.2mH		
L160	1-414-934-21	INDUCTOR	10uH		
L202	1-414-946-21	INDUCTOR	39uH		
L203	1-414-946-21	INDUCTOR	39uH		
L205	1-414-940-21	INDUCTOR	100uH		
L209	1-414-942-21	INDUCTOR	220uH		
L301	1-414-940-21	INDUCTOR	100uH		
L341	1-414-940-21	INDUCTOR	100uH		
L402	1-414-940-21	INDUCTOR	100uH		
L403	1-410-506-11	INDUCTOR	5.6uH		
L404	1-414-936-21	INDUCTOR	22uH		
L501	1-414-940-21	INDUCTOR	100uH		
L502	1-414-940-21	INDUCTOR	100uH		
L701	1-414-930-21	INDUCTOR	2.2uH		
L703	1-414-930-21	INDUCTOR	2.2uH		
L704	1-414-930-21	INDUCTOR	2.2uH		
L706	1-414-938-21	INDUCTOR	47uH		
L751	1-414-934-21	INDUCTOR	10uH		
L901	1-414-940-21	INDUCTOR	100uH		
		< PHOTO INTERRUPTER >			
PH100	8-749-013-23	PHOTO INTERRUPTER GP3S120			
PH101	8-749-013-23	PHOTO INTERRUPTER GP3S120			
		< IC LINK >			
⚠PS091	1-532-727-11	LINK, IC ICP-N5 (0.25A)			
⚠PS100	1-532-727-11	LINK, IC ICP-N5 (0.25A)			
		< TRANSISTOR >			
Q001	8-729-901-06	TRANSISTOR	DTA144EK		
Q081	8-729-802-91	TRANSISTOR	2SD879		
Q091	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q		
Q092	8-729-900-51	TRANSISTOR	DTA114TK		
Q100	8-729-043-84	TRANSISTOR	PT380F3		
Q101	8-729-043-84	TRANSISTOR	PT380F3		
Q111	8-729-281-53	TRANSISTOR	2SC1815-GR		
Q201	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q202	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q203	8-729-230-49	TRANSISTOR	2SC2712-G		
Q204	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q205	8-729-421-19	TRANSISTOR	UN2213		
Q206	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q208	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q209	8-729-421-19	TRANSISTOR	UN2213		
Q210	8-729-421-19	TRANSISTOR	UN2213		
Q211	8-729-421-19	TRANSISTOR	UN2213		
Q212	8-729-421-19	TRANSISTOR	UN2213		
Q301	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q401	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q402	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q403	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q404	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q501	8-729-230-49	TRANSISTOR	2SC2712-G		
Q701	8-729-106-68	TRANSISTOR	2SD1615A-GP		
Q750	8-729-424-67	TRANSISTOR	UN2216		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
Q751	8-729-424-67	TRANSISTOR	UN2216		
Q752	8-729-424-67	TRANSISTOR	UN2216		
Q753	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q755	8-729-010-05	TRANSISTOR	MSB709-RT1 (EZ8/EZ9)		
Q756	8-729-421-22	TRANSISTOR	UN2211 (ED8)		
Q757	8-729-421-22	TRANSISTOR	UN2211 (ED8)		
Q901	8-729-010-05	TRANSISTOR	MSB709-RT1		
		< RESISTOR >			
R001	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R003	1-216-097-91	RES,CHIP	100K	5%	1/10W
R004	1-216-097-91	RES,CHIP	100K	5%	1/10W
R005	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R006	1-216-105-91	RES,CHIP	220K	5%	1/10W
R007	1-216-111-00	METAL CHIP	390K	5%	1/10W
R008	1-216-097-91	RES,CHIP	100K	5%	1/10W
R009	1-216-097-91	RES,CHIP	100K	5%	1/10W
R021	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R022	1-216-117-00	METAL CHIP	680K	5%	1/10W
R023	1-216-037-00	METAL CHIP	330	5%	1/10W
R025	1-216-049-00	METAL CHIP	1K	5%	1/10W
R026	1-216-043-91	RES,CHIP	560	5%	1/10W
R027	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R071	1-216-079-00	METAL CHIP	18K	5%	1/10W
R081	1-249-408-11	CARBON	180	5%	1/4W
R082	1-249-401-11	CARBON	47	5%	1/4W
R083	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R084	1-249-381-11	CARBON	1	5%	1/4W
R085	1-249-396-11	CARBON	18	5%	1/4W
R092	1-216-083-00	METAL CHIP	27K	5%	1/10W
R093	1-249-394-11	CARBON	12	5%	1/4W F
R100	1-216-089-00	METAL CHIP	47K	5%	1/10W
R101	1-249-413-11	CARBON	470	5%	1/4W
R102	1-216-089-00	METAL CHIP	47K	5%	1/10W
R103	1-216-085-00	METAL CHIP	33K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R107	1-249-400-11	CARBON	39	5%	1/4W
R108	1-249-400-11	CARBON	39	5%	1/4W
R111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R112	1-249-429-11	CARBON	10K	5%	1/4W
R113	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R114	1-216-073-00	METAL CHIP	10K	5%	1/10W
R130	1-216-085-00	METAL CHIP	33K	5%	1/10W
R131	1-216-085-00	METAL CHIP	33K	5%	1/10W
R132	1-216-089-00	METAL CHIP	47K	5%	1/10W
R135	1-216-089-00	METAL CHIP	47K	5%	1/10W
R136	1-216-089-00	METAL CHIP	47K	5%	1/10W
R137	1-216-089-00	METAL CHIP	47K	5%	1/10W
R138	1-216-089-00	METAL CHIP	47K	5%	1/10W
R139	1-216-081-00	METAL CHIP	22K	5%	1/10W
R141	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R142	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R143	1-247-885-00	CARBON	180K	5%	1/4W
R144	1-249-436-11	CARBON	39K	5%	1/4W
R145	1-208-806-11	RES,CHIP	10K	0.50%	1/10W
R146	1-208-806-11	RES,CHIP	10K	0.50%	1/10W
R151	1-216-081-00	METAL CHIP	22K	5%	1/10W
R160	1-216-073-00	METAL CHIP	10K	5%	1/10W
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W
R165	1-216-049-00	METAL CHIP	1K	5%	1/10W
R166	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R167	1-249-437-11	CARBON	47K	5%	1/4W
R168	1-216-073-00	METAL CHIP	10K	5%	1/10W
R169	1-216-073-00	METAL CHIP	10K	5%	1/10W
R172	1-249-417-11	CARBON	1K	5%	1/4W
R173	1-249-417-11	CARBON	1K	5%	1/4W
R174	1-249-417-11	CARBON	1K	5%	1/4W
R175	1-216-089-00	METAL CHIP	47K	5%	1/10W
R176	1-216-049-00	METAL CHIP	1K	5%	1/10W
R177	1-216-113-00	METAL CHIP	470K	5%	1/10W
R178	1-216-295-00	METAL CHIP	0	5%	1/10W
R188	1-216-295-00	METAL CHIP	0	5%	1/10W
R189	1-216-295-00	METAL CHIP	0	5%	1/10W
R196	1-249-417-11	CARBON	1K	5%	1/4W
R197	1-216-049-00	METAL CHIP	1K	5%	1/10W
R198	1-216-049-00	METAL CHIP	1K	5%	1/10W
R199	1-216-049-00	METAL CHIP	1K	5%	1/10W
R203	1-249-417-11	CARBON	1K	5%	1/4W
R204	1-216-049-00	METAL CHIP	1K	5%	1/10W
R205	1-216-033-00	METAL CHIP	220	5%	1/10W
R206	1-216-049-00	METAL CHIP	1K	5%	1/10W
R207	1-216-089-00	METAL CHIP	47K	5%	1/10W
R209	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R210	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R211	1-216-041-00	METAL CHIP	470	5%	1/10W
R212	1-216-045-00	METAL CHIP	680	5%	1/10W
R213	1-216-049-00	METAL CHIP	1K	5%	1/10W
R214	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R216	1-216-047-91	RES,CHIP	820	5%	1/10W
R217	1-216-041-00	METAL CHIP	470	5%	1/10W
R218	1-216-033-00	METAL CHIP	220	5%	1/10W
R219	1-249-413-11	CARBON	470	5%	1/4W
R220	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R221	1-216-039-00	METAL CHIP	390	5%	1/10W
R222	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R223	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R224	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R225	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R226	1-247-807-31	CARBON	100	5%	1/4W
R227	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R229	1-216-295-00	METAL CHIP	0	5%	1/10W
R230	1-216-295-00	METAL CHIP	0	5%	1/10W
R231	1-216-295-00	METAL CHIP	0	5%	1/10W
R232	1-216-295-00	METAL CHIP	0	5%	1/10W
R233	1-216-049-00	METAL CHIP	1K	5%	1/10W
R234	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R235	1-216-073-00	METAL CHIP	10K	5%	1/10W
R236	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R237	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R239	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R240	1-249-416-11	CARBON	820	5%	1/4W
R242	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8/EZ9)
R243	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8/EZ9)
R244	1-216-047-91	RES,CHIP	820	5%	1/10W

MA-325

Ref. No.	Part No.	Description			Remark
R300	1-216-295-00	METAL CHIP	0	5%	1/10W
R301	1-216-093-00	METAL CHIP	68K	5%	1/10W
R302	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R306	1-216-073-00	METAL CHIP	10K	5%	1/10W
R307	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R309	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R310	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R311	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R312	1-216-079-00	METAL CHIP	18K	5%	1/10W
R313	1-216-109-00	METAL CHIP	330K	5%	1/10W
R314	1-216-036-00	METAL CHIP	300	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R316	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R318	1-249-430-11	CARBON	12K	5%	1/4W
R319	1-216-295-00	METAL CHIP	0	5%	1/10W
R320	1-216-047-91	RES,CHIP	820	5%	1/10W
R344	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R345	1-216-081-00	METAL CHIP	22K	5%	1/10W
R346	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R347	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R348	1-216-033-00	METAL CHIP	220	5%	1/10W
R360	1-216-049-00	METAL CHIP	1K	5%	1/10W
R361	1-216-049-00	METAL CHIP	1K	5%	1/10W
R368	1-216-133-00	METAL CHIP	3.3M	5%	1/10W
R370	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R371	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R372	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R378	1-216-083-00	METAL CHIP	27K	5%	1/10W
R380	1-216-041-00	METAL CHIP	470	5%	1/10W
R381	1-216-041-00	METAL CHIP	470	5%	1/10W
R382	1-216-295-00	METAL CHIP	0	5%	1/10W
R383	1-216-295-00	METAL CHIP	0	5%	1/10W
R384	1-216-091-00	METAL CHIP	56K	5%	1/10W
R385	1-216-091-00	METAL CHIP	56K	5%	1/10W
R386	1-216-041-00	METAL CHIP	470	5%	1/10W
R387	1-216-041-00	METAL CHIP	470	5%	1/10W
R389	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-049-00	METAL CHIP	1K	5%	1/10W
R402	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R403	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R404	1-216-041-00	METAL CHIP	470	5%	1/10W
R405	1-216-049-00	METAL CHIP	1K	5%	1/10W
R406	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R407	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R408	1-216-049-00	METAL CHIP	1K	5%	1/10W
R409	1-216-049-00	METAL CHIP	1K	5%	1/10W
R411	1-216-089-00	METAL CHIP	47K	5%	1/10W
R412	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R413	1-216-073-00	METAL CHIP	10K	5%	1/10W
R414	1-216-073-00	METAL CHIP	10K	5%	1/10W
R415	1-216-073-00	METAL CHIP	10K	5%	1/10W
R416	1-216-121-91	RES,CHIP	1M	5%	1/10W
R417	1-247-891-00	CARBON	330K	5%	1/4W
R419	1-216-295-00	METAL CHIP	0	5%	1/10W
R420	1-216-295-00	METAL CHIP	0	5%	1/10W
R421	1-216-033-00	METAL CHIP	220	5%	1/10W
R422	1-216-025-91	RES,CHIP	100	5%	1/10W
R501	1-216-045-00	METAL CHIP	680	5%	1/10W
R502	1-216-045-00	METAL CHIP	680	5%	1/10W
R503	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remark
R504	1-216-295-00	METAL CHIP	0	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-208-788-11	RES,CHIP	1.8K	0.50%	1/10W
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R509	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R510	1-216-073-00	METAL CHIP	10K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-247-863-91	CARBON	22K	5%	1/4W
R513	1-216-049-00	METAL CHIP	1K	5%	1/10W
R514	1-216-077-00	METAL CHIP	15K	5%	1/10W
R515	1-216-077-00	METAL CHIP	15K	5%	1/10W
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W
R701	1-216-041-00	METAL CHIP	470	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W
R703	1-216-049-00	METAL CHIP	1K	5%	1/10W (ED8)
R704	1-216-049-00	METAL CHIP	1K	5%	1/10W (ED8)
R705	1-216-049-00	METAL CHIP	1K	5%	1/10W
R707	1-212-893-00	FUSIBLE	330	5%	1/4W F
R708	1-216-113-00	METAL CHIP	470K	5%	1/10W
R710	1-216-295-00	METAL CHIP	0	5%	1/10W
R711	1-216-295-00	METAL CHIP	0	5%	1/10W
R712	1-216-295-00	METAL CHIP	0	5%	1/10W
R713	1-216-295-00	METAL CHIP	0	5%	1/10W
R714	1-216-295-00	METAL CHIP	0	5%	1/10W
R750	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R752	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
R753	1-216-295-00	METAL CHIP	0	5%	1/10W
R754	1-216-295-00	METAL CHIP	0	5%	1/10W
R755	1-216-295-00	METAL CHIP	0	5%	1/10W
R756	1-216-049-00	METAL CHIP	1K	5%	1/10W (EZ8/EZ9)
R758	1-216-295-00	METAL CHIP	0	5%	1/10W
R763	1-216-073-00	METAL CHIP	10K	5%	1/10W (ED8)
R764	1-216-295-00	METAL CHIP	0	5%	1/10W
R901	1-216-022-00	METAL CHIP	75	5%	1/10W
R902	1-249-407-11	CARBON	150	5%	1/4W
R904	1-249-408-11	CARBON	180	5%	1/4W
R905	1-216-025-91	RES,CHIP	100	5%	1/10W
R906	1-216-022-00	METAL CHIP	75	5%	1/10W
R907	1-216-041-00	METAL CHIP	470	5%	1/10W
R908	1-216-041-00	METAL CHIP	470	5%	1/10W
R909	1-216-097-91	RES,CHIP	100K	5%	1/10W
R910	1-216-097-91	RES,CHIP	100K	5%	1/10W
R911	1-216-097-91	RES,CHIP	100K	5%	1/10W
R912	1-216-097-91	RES,CHIP	100K	5%	1/10W
R913	1-216-089-00	METAL CHIP	47K	5%	1/10W
R914	1-216-089-00	METAL CHIP	47K	5%	1/10W
R915	1-216-295-00	METAL CHIP	0	5%	1/10W
R916	1-216-295-00	METAL CHIP	0	5%	1/10W

< SWITCH >

S100	1-771-155-11	SWITCH, ROTARY (CAM ENCODER)
S101	1-762-108-11	SWITCH, PUSH (1 KEY) (REC PRF)
S151	1-571-308-11	SWITCH, SLIDE (NTSC PB)

Ref. No.	Part No.	Description			Remark
		< TRANSFORMER >			
T081	1-431-100-11	TRANSFORMER, BIAS OSCILLATION			
T091	1-423-415-11	TRANSFORMER, BIAS OSCILLATION			
		< TUNER >			
TU701	1-693-414-11	TUNER, MOD/IF SOLID TYPE (ED8)			
TU702	1-693-427-11	TUNER, MOD/IF SOLID TYPE (EZ8/EZ9)			
		< VIBRATOR >			
X161	1-760-494-11	VIBRATOR, CRYSTAL (16MHZ)			
X201	1-579-608-11	VIBRATOR, CRYSTAL (4.433619MHz)			
X202	1-577-380-11	VIBRATOR, CRYSTAL (3.579545MHz)			
X401	1-577-289-11	VIBRATOR, CRYSTAL (17734.475MHz)			
X402	1-577-381-11	VIBRATOR, CRYSTAL (14318.18kHz)			
*	A-6791-591-A	NK-11 BOARD, COMPLETE (ED8/EZ8NZ)			
		**********			
		(Ref.No. 1,000 Series)			
		< CAPACITOR >			
C003	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C004	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C005	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C006	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C007	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C008	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C009	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C010	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C011	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C012	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C013	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C014	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C015	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C016	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C017	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C018	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C019	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C020	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C021	1-113-642-11	TANTAL. CHIP	47uF	10%	10V
C022	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C023	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
		< CONNECTOR >			
* CN001	1-691-183-11	CONNECTOR (BOARD TO BOARD) 13P			
		< DIODE >			
D001	8-719-066-72	DIODE BB135			
		< FERRITE BEAD >			
FB001	1-543-813-21	FERRITE 0UH			
FB002	1-543-813-21	FERRITE 0UH			
FB003	1-543-813-21	FERRITE 0UH			
		< IC >			
IC001	8-759-526-43	IC TDA9874H/V1,118			

Ref. No.	Part No.	Description			Remark
		< COIL >			
L006	1-412-945-11	INDUCTOR 3.3uH			
		< IC LINK >			
⚠PS001	1-576-122-21	LINK, IC CCP2E10 (0.4A)			
		< RESISTOR >			
R001	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R004	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R005	1-216-041-00	METAL CHIP	470	5%	1/10W
R006	1-216-041-00	METAL CHIP	470	5%	1/10W
R007	1-216-001-00	METAL CHIP	10	5%	1/10W
R008	1-216-001-00	METAL CHIP	10	5%	1/10W
R009	1-216-001-00	METAL CHIP	10	5%	1/10W
R010	1-216-001-00	METAL CHIP	10	5%	1/10W
R011	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R012	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R013	1-216-001-00	METAL CHIP	10	5%	1/10W
R014	1-216-295-00	METAL CHIP	0	5%	1/10W
R015	1-216-295-00	METAL CHIP	0	5%	1/10W
R016	1-216-033-00	METAL CHIP	220	5%	1/10W
		< VIBRATOR >			
X001	1-767-897-11	VIBRATOR, CRYSTAL (24.576MHz)			
	1-468-311-21	POWER BLOCK (SR-718)			
		**********			
		(Ref.No. 4,000 Series)			
		< CAPACITOR >			
C112	1-130-495-51	FILM	0.1uF	50V	
C114	1-130-495-51	FILM	0.1uF	50V	
C115	1-130-495-51	FILM	0.1uF	50V	
		< DIODE >			
⚠D107	9-900-534-01	DIODE ERA18-02			
⚠D108	9-900-534-01	DIODE ERA18-02			
D205	9-900-534-01	DIODE ERA18-02			
		< FUSE >			
⚠F101	1-532-388-31	FUSE (2.0A/250V)			
		< IC >			
⚠IC201	8-759-420-19	IC AN1431T			
		< PHOTO COUPLER >			
⚠PC101	8-749-924-84	COUPLER, PHOTO PS2561			
		< RESISTOR >			
R208	9-908-233-01	FUSIBLE	0.47	1/4W	

The components identified by mark ⚠or dotted line with mark ⚠are critical for safety.
Replace only with part number specified.

PS-414 RJ-79

Ref. No.	Part No.	Description			Remark
*	A-6791-623-A	PS-414 BOARD, COMPLETE			
		**********			
					(Ref.No. 1,000 Series)
		< CAPACITOR >			
C600	1-126-163-11	ELECT	4.7uF	20%	50V
C601	1-124-248-00	ELECT	22uF	20%	35V
C602	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C603	1-124-589-11	ELECT	47uF	20%	16V
C604	1-124-589-11	ELECT	47uF	20%	16V
C606	1-124-589-11	ELECT	47uF	20%	16V
C608	1-124-584-00	ELECT	100uF	20%	10V
C609	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN600	1-784-946-11	CONNECTOR, BOARD TO BOARD 9P			
CN601	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P			
		< DIODE >			
D600	8-719-911-19	DIODE 1SS119			
D601	8-719-911-19	DIODE 1SS119			
D602	8-719-109-84	DIODE RD5.1ES-B1			
		< IC >			
IC600	8-759-438-18	IC PQ12RD08			
		< COIL >			
L600	1-414-939-21	INDUCTOR	68uH		
L601	1-414-934-21	INDUCTOR	10uH		
		< IC LINK >			
⚠PS600	1-533-593-11	LINK, IC 491002 (2A)			
⚠PS601	1-533-586-31	LINK, IC 491.315 (315mA)			
		< TRANSISTOR >			
Q600	8-729-140-93	TRANSISTOR 2SB733-34			
Q601	8-729-421-22	TRANSISTOR UN2211			
Q602	8-729-018-99	TRANSISTOR 2SD2394-F			
Q603	8-729-119-79	TRANSISTOR 2SC2785-FEK			
		< RESISTOR >			
R600	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-216-430-11	METAL OXIDE	390	5%	1W F
R602	1-249-417-11	CARBON	1K	5%	1/4W
R603	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R604	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R605	1-249-414-11	CARBON	560	5%	1/4W
R606	1-247-815-91	CARBON	220	5%	1/4W
R607	1-247-815-91	CARBON	220	5%	1/4W
R608	1-215-908-00	METAL OXIDE	33	5%	3W F
R609	1-215-857-11	METAL OXIDE	10	5%	1W F
R610	1-249-417-11	CARBON	1K	5%	1/4W

Ref. No.	Part No.	Description			Remark
*	A-6791-642-A	RJ-79 BOARD, COMPLETE (EZ8AS)			
*	A-6791-645-A	RJ-79 BOARD, COMPLETE (EZ8NZ)			
*	A-6791-625-A	RJ-79 BOARD, COMPLETE (ED8/EZ9)			
		**********			
					(Ref.No. 1,000 Series)
		< CAPACITOR >			
C952	1-119-941-91	ELECT	470uF	20%	6.3V (EZ8NZ)
C953	1-124-589-11	ELECT	47uF	20%	16V (EZ8NZ)
C961	1-124-589-11	ELECT	47uF	20%	16V (ED8/EZ9)
C964	1-126-160-11	ELECT	1uF	20%	50V (ED8/EZ9)
C965	1-126-160-11	ELECT	1uF	20%	50V (ED8/EZ9)
		< CONNECTOR >			
CN951	1-506-485-11	PIN, CONNECTOR 6P			
CN952	1-506-484-11	PIN, CONNECTOR 5P (ED8/EZ8NZ/EZ9)			
		< JACK >			
CNJ952	1-565-726-11	JACK, PIN 3P (LINE-3 IN) (ED8/EZ9)			
CNJ953	1-784-816-11	JACK, PIN 2P (LINE-2 OUT)			
CNJ954	1-784-818-11	JACK, PIN 2P (SAT DEC IN/OUT) (EZ8NZ)			
		< DIODE >			
D951	8-719-109-93	DIODE RD6.2ES-B2			
D952	8-719-109-93	DIODE RD6.2ES-B2			
		< IC >			
IC961	8-759-454-62	IC uPC4558G2-E2 (ED8/EZ9)			
		< COIL >			
L951	1-414-940-21	INDUCTOR	100uH (EZ8NZ)		
		< RESISTOR >			
R951	1-216-022-00	METAL CHIP	75	5%	1/10W (ED8/EZ8NZ/EZ9)
R952	1-216-022-00	METAL CHIP	75	5%	1/10W (EZ8NZ)
R954	1-249-412-11	CARBON	390	5%	1/4W F (EZ8NZ)
R955	1-216-025-91	RES,CHIP	100	5%	1/10W (EZ8NZ)
R956	1-216-041-00	METAL CHIP	470	5%	1/10W
R957	1-216-041-00	METAL CHIP	470	5%	1/10W
R961	1-216-097-91	RES,CHIP	100K	5%	1/10W (ED8/EZ9)
R962	1-216-097-91	RES,CHIP	100K	5%	1/10W (ED8/EZ9)
R963	1-216-097-91	RES,CHIP	100K	5%	1/10W (ED8/EZ9)
R964	1-216-097-91	RES,CHIP	100K	5%	1/10W (ED8/EZ9)
R965	1-216-089-00	METAL CHIP	47K	5%	1/10W (ED8/EZ9)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R966	1-216-089-00	METAL CHIP	47K	5%	1/10W (ED8/EZ9)
R967	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8/EZ9)
R968	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8/EZ9)
*	A-6791-655-A	SW-307 BOARD, COMPLETE (EZ9)			
		**********			(Ref.No. 1,000 Series)
		< CAPACITOR >			
C400	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
		< CONNECTOR >			
CN400	1-784-484-11	CONNECTOR, FFC/FPC 5P			
		< DIODE >			
D400	8-719-056-07	DIODE SLR-342MCT31 (ON/STANDBY)			
		< IC >			
IC400	8-749-011-05	IC GP1U28X			
		< TRANSISTOR >			
Q400	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R400	1-216-029-00	METAL CHIP	150	5%	1/10W
R401	1-216-295-00	METAL CHIP	0	5%	1/10W
		< SWITCH >			
S400	1-762-196-21	SWITCH, TACT (ON/STANDBY)			
		MISCELLANEOUS			
		**********			
11	1-783-849-11	CABLE, FLAT (FMF-30)			
16	1-762-844-21	SWITCH, ROTARY			
53	1-475-835-11	SWITCH BLOCK, CONTROL			
57	1-762-844-21	SWITCH, ROTARY			
63	1-783-851-11	CABLE, FLAT (FFS-6)			
66	1-783-850-11	CABLE, FLAT (FFD-3)			
68	1-783-849-11	CABLE, FLAT (FMF-30)			
⚠109	1-777-854-21	CORD, POWER (ED8)			
⚠109	1-777-855-22	CORD, POWER (EZ8/EZ9)			
113	1-779-725-11	CONNECTOR, BOARD TO BOARD 5P			
704	1-500-144-11	HEAD, FE			
721	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)			
768	8-839-045-02	DRUM ASSY DZH-95A/Z-RP			
M902	1-698-971-11	MOTOR, DC (CAPSTAN)			
M903	X-3947-577-1	MOTOR ASSY, CAM			

Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-682-547-04	SCREW +P 3X6	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#4	7-685-133-19	SCREW (DIA. 2.6) (IT3B)	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-475-612-11	COMMANDER, STANDARD (RMT-V243) (EZ9)	
	1-475-614-11	COMMANDER, STANDARD (RMT-V245)	(ED8/EZ8)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (ED8)	
	1-575-334-11	CORD, CONNECTION	(STEREO AV CABLE 1.5m)
	1-696-593-11	CORD, CONNECTION (PAL) (ANT 1.5m)	
	3-861-800-11	MANUAL, INSTRUCTION (ENGLISH) (EZ9)	
	3-861-801-11	MANUAL, INSTRUCTION (ENGLISH) (ED8)	
	3-861-801-21	MANUAL, INSTRUCTION (ARABIC) (ED8ME)	
	3-861-801-31	MANUAL, INSTRUCTION (JAPANESE) (ED8)	
	3-861-802-11	MANUAL, INSTRUCTION (ENGLISH) (EZ8)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-921-693-11

Sony Corporation
Home A&V Products Company

98H0515-1D
Printed in Japan © 1998. 8
Published by General Engineering Dept.
(Osaki East)